

THE THOMIST

A SPECULATIVE QUARTERLY REVIEW

EDITED BY THE DOMINICAN FATHERS

VOLUME
XXII

1959

THE THOMIST PRESS

WASHINGTON 17, D. C.

Publishers

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KRAUS REPRINT CORPORATION

New York

1968

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THE THOMIST

Trade Mark Registered U. S. Patent Office

PRINTED IN THE UNITED STATES OF AMERICA

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OF THEOLOGY AND PHILOSOPHY



EDITORS: THE DOMINICAN FATHERS OF THE PROVINCE OF ST. JOSEPH

Publishers: The Thomist Press, Washington 17, D. C.

VOL. XXII

JANUARY, 1959

No. 1

ST. THOMAS AND THE ENCYCLICAL *MYSTICI CORPORIS*



CATHOLIC scholars are universally grateful to his Holiness, Pope Pius XII, for the many clear and penetrating statements which he issued on both dogmatic and moral problems. It would be difficult to point to any one document as the most valuable and timely contribution to come from his pen; however, it is certain that the Encyclical Letter, *Mystici Corporis*, is among the most significant pronouncements made by his Holiness. Besides having given us a profound and scholarly treatise on a controversial topic, the Holy Father has succeeded in establishing a beautiful and delicate balance between the internal and external bonds which unite men to Christ in His Mystical Body. Therein lies the principal merit of this great Encyclical.

In developing his treatise, the Pope is very generous in his praise of St. Thomas:

You are aware, Venerable Brothers, of the brilliant language by the masters of Scholastic Theology, and chiefly by the Angelic and Common Doctor, when treating this question; and you know that the reasons advanced by Aquinas are a faithful reflexion of the mind and writings of the Holy Fathers, who after all merely repeated and commented on the inspired word of Sacred Scripture.¹

In the light of this eulogy, it would be incongruous that we should find any irreconcilable discrepancies between *Mystici Corporis* and the doctrine of St. Thomas. We should have no anxiety, then, in submitting the works of the "Common Doctor"—in particular, his tract on the capital grace of Christ in the Third Part of the *Summa*—to a critical comparison with the papal Encyclical. It is the aim of this paper to institute such a comparison in order to offer solutions to certain real difficulties which have arisen especially with regard to St. Thomas's notion of membership in the Mystical Body in the wake of *Mystici Corporis*. The following four points which His Holiness makes in the Encyclical will provide the basis for this comparison:

1. The Roman Catholic Church and the Mystical Body of Christ are one and the same thing; i. e., they are coextensive. In fact, His Holiness offers the term "Mystical Body" as an ideal definition of the Church of Christ.² If *Mystici Corporis* has left any doubt as to the identity of these two terms, the Encyclical, *Humani Generis*, has emphatically cleared it up:

Some say they are not bound by the doctrine, explained in our Encyclical letter of a few years ago and based on the sources of Revelation, which teaches that the Mystical Body of Christ and the Roman Catholic Church are one and the same thing. . . . These and like errors, it is clear, have crept in among certain of our sons who are deceived by imprudent zeal for souls or by false science.³

2. The soul of the Mystical Body is the Holy Ghost.⁴ We

¹ AAS. XXXV (1943), pp. 193-248. English translation by National Catholic Welfare Conference. (Washington, D. C., 1943), n. 35. This translation is used throughout.

² *Ibid.*, n. 13.

³ AAS. XXXXII (1950), p. 571. English translation by Paulist Press. (New York, 1950) nn. 42, 44.

⁴ *Mystici Corporis*, n. 56.

cannot admit that the body and soul of the Church represent two different societies with diverse memberships. As His Holiness says:

For this reason We deplore and condemn the pernicious error of those who conjure up from their fancies an imaginary Church, a kind of Society that finds its origin and growth in charity, to which they somewhat contemptuously oppose another, which they call juridical. But this distinction, which they introduce, is baseless. . . . There can, then, be no real opposition or conflict between the invisible mission of the Holy Spirit and the juridical commission of Ruler and Teacher received from Christ. Like body and soul in us, they complement and perfect each other, and have their source in our one Redeemer. . . .⁵

3. True membership in the Mystical Body demands that one possess three conditions: baptism of water, profession of the true faith, and submission to the authority of the Church. To be lacking in one or more of these qualifications excludes a person from membership.⁶ Here the Pope is merely repeating the legislation of the Code of Canon Law:

By baptism a person becomes a subject of the Church of Christ with all the rights and duties of a Christian, unless, in so far as rights are concerned, there is some obstacle impeding the bond of communion with the Church, or a censure inflicted by the Church.⁷

4. There is definite evidence that His Holiness intends to identify the Mystical Body (i. e., the Roman Catholic Church) with the Church Militant. In the passage already cited from *Humani Generis*, he specifies Roman Catholic Church, the term "Roman" ordinarily limiting the extension of Church to the visible portion. In *Mystici Corporis*, he explicitly limits his remarks on the Mystical Body to the Church Militant;⁸ later on in the Encyclical, he adds:

For nothing more glorious, nothing nobler, nothing surely more ennobling can be imagined than to belong to the Holy, Catholic, Apostolic, and Roman Church. In that Church we become members

⁵ *Ibid.*, n. 64.

⁶ *Ibid.*, n. 22.

⁷ *Cf. C. I. C., Can. 87.*

⁸ *Mystici Corporis*, n. 1.

of one Body that deserves all veneration, are guided by one supremely eminent Head; in it we are filled with one divine Spirit; in it we are nourished *during our earthly exile* with one doctrine and one Bread of Angels, *until* at last we enter into the one, unending blessedness of heaven.⁹

POINT I: Identification of the Roman Catholic Church with the Mystical Body of Christ

In comparing the first of these four points with the doctrine of St. Thomas, we find perfect agreement. At the very beginning of his tract on the capital grace of Christ, he states: "*tota Ecclesia dicitur unum corpus mysticum per similitudinem ad naturale corpus hominis.*"¹⁰ A little later on, he puts the two terms together, thus: *corpus Ecclesiae mysticum*.¹¹ Like the Pope, then, St. Thomas identifies the Church with the Mystical Body: for him the terms are coextensive. Both authorities use the words Church and Mystical Body interchangeably, and they shall be used thus throughout this paper.¹²

POINT II: The Holy Ghost as the Soul of the Mystical Body

In the *Summa Theologica*, St. Thomas describes the Holy Ghost as the "heart" of the Church:

... but the heart has a certain hidden influence. And hence the Holy Ghost is likened to the heart, since He invisibly quickens and unifies the Church; but Christ is likened to the Head in His visible nature in which man is set over man.¹³

That this term has the same force as "soul," however, is evident from St. Thomas's treatise on the Apostles' Creed, where he actually uses the word soul:

⁹ *Ibid.*, n. 89. Italics mine.

¹⁰ *Summa Theol.*, III, q. 8, a. 1.

¹¹ *Ibid.*, aa. 3, 4.

¹² This identification of the Church and the Mystical Body of Christ must not be confused with the fact, to be treated under the next two points, that St. Thomas gives a much broader extension to the two terms than does the Sovereign Pontiff.

¹³ *Summa Theol.*, *loc cit.*, a. 1, ad. 3. "... sed cor habet quamdam influentiam occultam. Et ideo cordi comparatur Spiritus Sanctus, qui invisibiliter Ecclesiam

We see that in a man there are one soul and one body; and of his body there are many members. So also the Catholic Church is one body and has different members. The soul which animates this body is the Holy Ghost.¹⁴

Both the Pope and St. Thomas describe the Holy Ghost as the internal bond uniting each member to Christ and to each other. The Pope speaks of this bond as comprising faith, hope and charity through the "communication of the Spirit of Christ" (the Holy Ghost, Who is) "the channel through which flow into all the members of the Church those gifts, powers and extraordinary graces found superabundantly in the Head as in their source. . . ." ¹⁵ In regard to the first two points, then, it is clear that there is no disagreement between the papal Encyclical and the teaching of the Angelic Doctor. It is on the third and fourth points that discrepancies appear, to the extent that one writer has affirmed that St. Thomas "would have written quite differently if he had the papal encyclical of Pius XII to guide him." ¹⁶

POINT III: Members of the Mystical Body

In general, St. Thomas includes more individuals in his concept of the Church than does the Pope, as will be seen from the comparison which follows: ¹⁷

vivificat et unit; capiti autem comparatur ipse Christus secundum visibilem naturam, secundum quam homo hominibus praefertur."

¹⁴ *Opusc.* VII, a. 9. "Sicut vidimus quod in uno homine est una anima et unum corpus, et tamen sunt diversa membra ipsius; ita Ecclesia catholica est unum corpus, et habet diversa membra. Anima autem quae hoc corpus vivificat est Spiritus Sanctus."

¹⁵ *Mystici Corporis*, n. 77. With regard to the use of "body" and "soul" in the Baltimore Catechism cf. *The Homiletic and Pastoral Review*, LI (1950-1951), p. 86. Cf. also: Joseph C. Fenton in *The American Ecclesiastical Review*, "The Use of the Terms Body and Soul with Reference to the Catholic Church," CX (1944), pp. 48-57; "Father Journet's Concept of the Church," CXXVII (1952), pp. 370-380.

¹⁶ John L. Murphy, *The Living Christ* (Milwaukee, 1956), p. 51. Cf. also pp. 52-53.

¹⁷ The first two of these points will be taken up in detail later, with relevant texts.

COMPARATIVE EXTENSION OF THE TERM MYSTICAL BODY
(= ROMAN CATHOLIC CHURCH)

ST. THOMAS

1. Extends membership in the Mystical Body to the angels and blessed souls in heaven, and to the souls in purgatory.
2. Includes the just of the Old Testament, along with the faithful of the New Testament, in the Mystical Body.
3. Includes all who possess charity, without qualification. Hence, baptism of desire admits a person to the Mystical Body, and every one who is actually in the state of sanctifying grace must be included therein, whether Catholic, material heretic, or sincere pagan upon making a perfect act of contrition.¹⁸ In fact, St. Thomas admits incorporation into the Church *mentaliter* as well as *corporaliter*.¹⁹
4. While listing faith as a title of membership, he is loath to admit sinners (i.e., those with faith but not charity) into the Church. He classifies them as "potential" members, though, conceding that they may also be called "imperfect" (actual) members because of their unformed faith, united to Christ only *secundum quid*.²¹
5. Designates those who lack both faith and charity as potential members, with

PIUS XII

1. Limits membership in the Mystical Body to the Church Militant.
2. Identifies the Mystical Body with the Catholic Church, which came into existence only with the death of Christ on the Cross.
3. Insists on baptism of water, together with true faith and submission to Church authority, as indispensable conditions of membership. While granting that one who lacks one or more of these conditions may be "unsuspectingly related" to the Mystical Body "in desire and resolution," he adds that "they remain deprived of so many precious gifts and helps from heaven, which one can enjoy only in the Catholic Church."²⁰
4. Grants sinners who possess the three conditions the status of members. His Holiness nowhere concedes varying "degrees" of membership in the Mystical Body, though he intimates that the amount of life among the members may vary.²²
5. Does not follow St. Thomas in the use of the term "potential" members.

¹⁸ *Summa Theol.*, III, q. 8, a. 3.

¹⁹ *Ibid.*, q. 69, a. 5, ad 1.

²⁰ *Mystici Corporis*, n. 100.

²¹ *Summa Theol.*, III, q. 8 a. 3, ad 2. In *III Sent.*, d. 13 q. 2, a. 2, qcla. 2, sol. 2 ad 2 St. Thomas refers to sinners as members of the Mystical Body *aquivoce*.

²² *Mystici Corporis*, n. 23: "It is the Saviour's infinite mercy that allows place in His Mystical Body here for those whom He did not exclude from the banquet of old (Cf. Matt. 9:11). For not every sin, however grave and enormous it be, is such as to sever a man automatically from the body of the Church, as does schism or heresy or apostasy. Men may lose charity and divine grace through sin and so become incapable of supernatural merit, and yet not be deprived of all life, if they hold on to faith and Christian hope. . . ."

the exception of those who are already damned; these latter *totaliter desinunt esse membra Christi*.²³ This phrase, together with its context, indicates that St. Thomas is taking this potentiality as something very positive—a quasi-membership—based upon (a) the merits of Christ, which are sufficient to save all men; and (b) man's free will.²⁴

All individuals who lack any one of the three conditions are classed simply as non-members, even though they possess the extraordinary "relationship" to the Church mentioned above. In other words, the Pope does not consider this relationship either as a type of membership in the Church or as its equivalent, for he expresses the desire that they "enter into Catholic unity," since otherwise "they cannot be sure of their salvation."²⁵

In the light of this comparison, it becomes clear that the Pope and St. Thomas are using different foundations for their divisions of membership. St. Thomas is taking the capital grace of Christ—especially charity—for his foundation; the Pope is using the three conditions mentioned above. To put it another way, St. Thomas defines membership in the Mystical Body in terms of the *internal* bond (or *invisible* element), whereas Pius XII designates membership in terms of the *external* bond (or *visible* element).

St. Thomas, it must be remembered, is not speaking formally of the Church in the Third Part of the Summa; in fact, he has left us no strictly ecclesiological treatise. He is discussing the capital grace of Christ and its effects. He points out that the principal effect of the flow of Christ's grace into the souls of men is that it constitutes Christ as their Head, and makes them His members. Arguing from the revealed principles (1) that Christ is the Head of all men, and (2) that the essential, internal basis of their union with Christ is His capital grace, St. Thomas proceeds to evaluate His headship in terms of that grace. Quite simply stated, the Angelic Doctor's teaching is this: Christ's headship—and, consequently, our union with Him—will be in proportion to the degree of habitual grace we possess. In line with this principle, he distinguishes three classes or degrees of union with Christ: that of the blessed in heaven

²³ *Summa Theol.*, III, q. 8, a. 3.

²⁴ *Ibid.*, ad 1.

²⁵ *Mystici Corporis*, n. 100.

through glory; of the faithful on earth through charity; and finally, of those united to Him through faith alone.²⁶

In grouping all of these individuals together and designating them as members of the Mystical Body of Christ, St. Thomas is following the example of some of the early Fathers of the Church, who frequently used the Pauline metaphor of *body* to describe the internal union of the soul with Christ. In using the term with this supposition, neither the Fathers nor St. Thomas meant to imply that no external, juridical bond was required for membership in the Church. They were primarily interested in developing the inner, organic aspect of our union with the Redeemer; they wrote as theologians, not as apologetes or canonists. It is a fact that, ever since St. Paul applied this figure to the Church, it has been used in a variety of senses to express several different types of Christ's headship over creatures. The principal types are:²⁷

1. The universal headship of Christ over all creatures by reason of His divine, exemplary causality as the Word of God.
2. His headship over the whole human race by reason of having died to save all men from original and actual sins.
3. His headship over all men who have believed, or shall believe, in Him as the Redeemer. This includes the Jews before the Redemption, as well as Christians after it.
4. His headship over all intellectual creatures who share in His grace in any manner whatsoever, whether essentially (as in the case of men), or accidentally (as in the case of the angels).
5. The strict, juridical headship of Christ, constituted by baptism of water, profession of the true faith, and submission to the authority of the Church.

It was quite common among the Fathers of the first five centuries to speak of the fourth type of headship as the equivalent of the Mystical Body. St. Augustine, the great expounder of the mystical relationship between Christ and His Church, refers to the "whole assembly of Saints . . . from Abel

²⁶ As is indicated in the comparative schema, St. Thomas is inclined to classify those who possess faith without charity (i. e. sinners) as potential members.

²⁷ John L. Murphy, *op. cit.* On pp. 45 ff. Father Murphy summarizes the types.

down to those who shall be born to the end" as members of Christ's body, the Church.²⁸ Here he is using the Pauline metaphor in a broad sense,²⁹—the sense in which St. Thomas also used the term. And they do so with good reason, since the term was coined primarily to designate the internal, organic, supernatural character of the Church.

For the next seven centuries this sublime doctrine saw little theological development; in fact, scarcely any significant progress was made until the Scholastics took up their pens in the thirteenth century. Although he was not the only one to write on this topic, St. Thomas has left a greater imprint on subsequent thinking and writing about the Mystical Body than any of his contemporaries. So beautifully and extensively did he treat of it that not only Pius XII, but other modern authors have been quick to recognize his contribution. The Abbé Anger has gone so far as to declare:

St. Thomas took great care never to lose sight of the doctrine of the Mystical Body. Taking his work as a whole, particularly its most finished, maturest part, the *Summa Theologica*, one finds the Christian doctrine in all its purity set forth with precision and in such right sense that in many instances the Council of Trent had but to confirm the doctrine and exposition.³⁰

The history of the Church gives us an insight as to why St. Thomas and his contemporaries did not develop the juridical aspect of the Mystical Body. At that time there were few, if

²⁸ In Ps. 90, sermo 2; PL, XXXVII, 1159.

²⁹ Cf. John C. Gruden, *The Mystical Christ* (St. Louis, 1936), pp. 105, 153. He distinguishes between *quasi-proper* (strict, "mystical," juridical) sense and the *figurative* (broad, "metaphorical") sense of the term Mystical Body. In a paper of this nature, it is impossible to trace the historical development of the doctrine in any detail; nor is it necessary. This task has been ably performed by a number of competent authors, among whom the work here referred to—though written seven years before the Encyclical appeared—is outstanding. Fr. Emile Mersch's *The Whole Christ* (Milwaukee, 1936), Part I, is excellent for the development of the concept in Sacred Scripture.

³⁰ Abbé Anger, *The Doctrine of the Mystical Body of Christ According to the Principles of the Theology of St. Thomas*. (New York, 1931), p. xvi. Cf. also J. T. Dittoe, O. P., "Sacramental Incorporation into the Mystical Body." *THE THOMIST*, IX (1946), pp. 469-514.

any, recognized material heretics. If a person denied an article of faith or rejected the whole of Christianity, he was considered to be a formal heretic or an apostate, guilty of sin before God.³¹ We can appreciate this attitude more readily when we consider the seemingly inescapable visibility of the Church within the civilized medieval world. Catholicism stood out as the overwhelming—virtually unique—embodiment of Christianity: the Roman Catholic Church *was* Christianity. It was inconceivable that a sincere individual, raised in such an atmosphere and tradition, could inculpably withdraw from the Catholic Church, or find God apart from it.

With regard to infidels, St. Thomas admits the possibility of a negative infidelity, i. e., invincible ignorance of the true faith. However, he concludes that if such infidels die in that state, “*damnantur quidem propter alia peccata, quae sine fide remitti non possunt.*”³² Yet, he seems to be of the opinion that this will never be the case in the concrete; for, in discussing the question of what truths one must believe explicitly in order to be saved, he answers with reference to the salvation of a man brought up outside the pale of civilization:

Thus, if someone so brought up followed the direction of natural reason in seeking good and avoiding evil, it certainly must be held that God would either reveal to him through internal inspiration what had to be believed, or would send some preacher of the faith to him.³³

³¹ Cf. *Summa Theol.*, II II, q. 11. St. Thomas does not distinguish between material and formal heretics; in fact, he concludes that pertinacious heretics are to be put to death. But it should be carefully noted that he puts those whom modern theologians designate “material heretics” *within* the Mystical Body, provided they are in the state of grace. This is in accord with his use of grace as the foundation of membership.

³² *Ibid.*, q. 10, a. 1.

³³ *De Verit.*, q. 14, a. 11, ad. 1. “Si enim aliquis taliter nutritus, ductum naturalis rationis sequeretur in appetitu boni et fuga mali, certissime est tenendum, quod ei Deus vel per internam inspirationem revelaret ea quae sunt ad credendum necessaria, vel aliquem fidei praedicatorum ad eum dirigeret.” He lends further weight to this conclusion when he states in the *Summa Theologiae* I, II, q. 89, a. 6 that in his first human act, a man either directs himself to his true ultimate end (thus having baptism of desire), or else turns to a false ultimate end, thereby committing mortal sin. In the former case, the individual would evidently fit in

In the light of these points, it is evident that there was not a great need in the thirteenth century of delving into the minimum external signs which a true Christian must possess. Hence, we can see more clearly the reason why St. Thomas and his followers devoted their attention almost exclusively to the internal bond of the union between Christ and His members, even to the extent of adjudicating membership in His Mystical Body in terms of habitual grace, especially charity. For the Scholastics, one's degree of grace provided an adequate (though, as we can see today, not a precise) index of membership, which—because of the nature of grace—would logically admit of degrees.

It was not until the Protestant Reformation that the juridical aspect of the Mystical Body was developed to a degree comparable to the progress made by the Scholastics on the internal bond. In defending the Church against the Reformers, Catholic apologetes—among whom St. Robert Bellarmine stands out—were obliged to concentrate on the external, visible bond of the Mystical Body. Protestant Christianity furnished a palatable, albeit incomplete, substitute for Catholicism, and gave rise to a tradition which, with the passage of time, made it possible for large groups of sincerely erring believers (referred to now as material heretics) to coexist in good faith with their orthodox brethren. This shift of emphasis from the internal to the external bond persisted down to the time of the Vatican Council to such a degree that modern theologians have deplored the lag in the development of the spiritual aspect of the doctrine.³⁴

However, the liturgical revival which the turn of the century ushered in has been accompanied by a corresponding (perhaps

among those whom Pius XII classes as being "related" to the Mystical Body: outside the Church, yet somehow united to it "in desire and resolution," and therefore capable of salvation. As we noted above, St. Thomas grants such a one the status of a member. We shall have more to say in our conclusion about this mysterious, extraordinary union with Christ by one outside of His Mystical Body.

³⁴ Thus, Fr. Mersch speaks of a "resurgence" of the doctrine of the Mystical Body, *op. cit.*, p. 556; and Fr. Dittoe, *op. cit.*, p. 469, refers to it as "a doctrinal survival against naturalism and a spiritual revival in the face of indifferentism." But see also Fr. Fenton, "An Accusation Against School Theology," *American Ecclesiastical Review*, CX (1944), pp. 213-222.

one should say complementary) revival in this neglected area. A flood of literature has appeared on the subject of the Mystical Body—most of it sound, but some not entirely orthodox.³⁵ In the Encyclical, *Mystici Corporis*, His Holiness corrects the errors which have appeared. But his greatest and most enduring contribution is the delicate, harmonious blending of the internal with the external aspects of the mystery to give us the strict, Pauline concept of the Church as the Body of Christ. Recognizing the great synthesis of the Fathers and Scholastics, especially St. Thomas, the Pope integrates beautifully the mystical elements with the juridical elements. In stressing the unity of the Mystical Body, he shows that the visible ties uniting the Christian to Christ, and the invisible bonds to which they are ordered, are actually two aspects of the same organism.³⁶ Finally, without underemphasizing the importance of the Holy Ghost with His grace and Gifts as the soul of the Church, His Holiness points out that membership in the strict, proper and univocal sense is to be defined in terms of the external or juridical bond rather than in terms of grace.³⁷

One can truly say that Pius XII has done for these two aspects of the Church what St. Thomas did for sacramental theology in carefully balancing the elements of sign and cause.³⁸ In fact, St. Thomas's tract on the sacraments offers a valuable precedent to what the Pope has accomplished. Following the medieval tradition, the Angelic Doctor distinguishes in each sacrament between the *external sign*, or *sacrament*, and the *invisible grace* conferred, or *res*. The Pope's analysis of the

³⁵ *Mystici Corporis*, n. 8.

³⁶ *Ibid.*, n. 64. "There can, then, be no real opposition or conflict between the invisible mission of the Holy Spirit and the juridical commission of the Ruler and Teacher received from Christ. Like body and soul in us, they complement and perfect each other, and have their source in our one Redeemer, who not only said, as He breathed on the Apostles: 'Receive ye the Holy Spirit (John 20:22)', but also clearly commanded: 'As the Father hath sent me, so I send you' (John 20:21); and again: 'He who heareth you, heareth me.' (Luke 10:16)." Cf. also, "Theology and the Laity," *Catholic Mind*, LIII (1955), p. 580.

³⁷ *Mystici Corporis*, n. 22.

³⁸ Godfrey Diekmann, O. S. B., "Two Approaches to the Sacraments," *Worship*, XXXI (1957), pp. 504-520.

Mystical Body is along similar lines. Its members must have a triple *external bond*: the washing with water in sacramental baptism, public profession of the true faith, and submission to the Supreme Pontiff. Corresponding to these external elements is the *invisible bond*: the grace of justification together with the infused virtues and Gifts, and the abiding intention of at least being considered a member of the Church in union with the Pope. Finally, the *state of membership* in the Mystical Body may be compared to the scholastic *res et sacramentum*, that intermediate reality-sign found in each of the sacraments—especially the indelible character of baptism, confirmation and holy orders.³⁹

We must conclude, then, that St. Thomas and the Scholastics used the terms "Church" and "Mystical Body" in one of the analogical senses common to the pre-Reformation era.⁴⁰ To say that the identification of Christ's headship of men through grace with the Mystical Body is an analogical use of the term is not to deny that Christ is the Head of all who possess grace; it is simply stating that this headship is of a different kind from that constituted by the triple bond spoken of by Pius XII. Nor does it establish a conflict between the two headships, as though the external bond were opposed to the internal bond. The perfect Christian will possess both bonds; but the bond which formally constitutes his membership in the Church is the external bond. As we shall note further on, the headship of Christ over those in the state of grace corresponds more properly with what we term the Communion of Saints.⁴¹

³⁹ *Summa Theol.*, III, q. 66, a. 1. Though the conferring of grace is the goal of the sacraments, St. Thomas emphasizes that they pertain to the category of *sensible signs*.

⁴⁰ St. Thomas certainly recognized that the term applies only analogically to the angels for he says in q. 8, a. 4 that they are members *similitudinarie*. In a. 3 he says: "Christus est caput omnium hominum, sed secundum diversos gradus."

⁴¹ Fr. Emilio Sauras, O.P. in his work *El Cuerpo Místico de Cristo* (Madrid, 1956) 2nd Ed., p. 16, distinguishes between the *juridico-theological* and the merely *theological* aspects of the Mystical Body. However, from what he says on p. 15—especially in the use he makes of the citation from the *Summa Theologiae*, III, q. 8, a. 6—it is not clear that he intends the same distinction which the Pope has in mind in *Mystici Corporis*. While agreeing with Fr. Sebastian Tromp, S.J. in

Now that we have the papal Encyclical to guide us, we can readily see the same limited supposition of the term *Body* in the Epistles of St. Paul, the originator of this historic metaphor. The primary analogate is especially clear in his Epistle to the Colossians, where the Apostle recapitulates the various headships of Christ. He brings in several different analogates (even including Christ's headship over the demons), but emphatically sets apart the Church as a special supposition by the phrase, "Again, He is the Head of His Body, the Church. . . ." ⁴² Without reading too far between the lines, we can see St. Paul insisting on the three conditions laid down by Pius XII. In the next chapter, the Apostle declares:

For you were buried together with Him in *baptism*, and in Him also rose again through *faith* in the working of God Who raised Him from the dead. ⁴³

A little further on, after warning the Colossians against Judaizing Christians, he concludes with these remarks directed against false, self-appointed teachers:

Let no one cheat you who takes pleasure in self-abasement and worship of the angels, and enters vainly into what he has not seen, puffed up by his mere human mind. *Such a one is not united to the head*, from whom the whole body, supplied and built up by joints and ligaments, attains a growth that is of God. ⁴⁴

This passage, following upon St. Paul's earlier insistence that he is an official minister of the true gospel "by the will of God," ⁴⁵ shows that submission to duly appointed ecclesiastical

classifying these two aspects as different formalities having the same material object, he bases his division of membership on the internal ("theological") bond, habitual grace. Hence, he includes as actual members the blessed in heaven; all the just who have ever lived on earth; sinners who retain faith; and the souls in purgatory. (Cf. pp. 556 ff. and the index, *Miembros*, p. 922) Like St. Thomas, then, Fr. Sauras is using the term *Mystical Body* analogically.

⁴² Col. 1:12-23, Confraternity Edition. This text is used as the epistle for the Feast of Christ the King. Cf. the commentary on this text in the Confraternity Edition.

⁴³ *Ibid.*, v. 12.

⁴⁴ *Ibid.*, vv. 18-19.

⁴⁵ *Ibid.*, vv. 1 and 23.

authority is required of a member of Christ's Body along with baptism and true faith.

Perhaps the most serious objection which can be brought against the Encyclical is that, whereas a person may be an actual member of the Mystical Body through possession of the three conditions, which are external and juridical, he may at the same time lack the all-important, internal element of sanctifying grace. On the other hand, an individual can have the latter element, yet be excluded from membership by reason of lacking one or more of the three conditions (e. g., in the case of someone who has baptism of desire). The dilemma is a real one; ultimately, it must be resolved back to the mystery contained in the parables of the kingdom of heaven, in which Our Lord insists that the wicked be not expelled until the day of judgment.⁴⁶ St. Augustine gives us a clue when he states: "For whatsoever yet adhereth to the body, is not beyond hope of healing; whereas that which hath been cut off, can neither be in the process of curing, nor be healed."⁴⁷ It is certain that, in the sacrament of penance, a paralyzed (sinful) member can regain grace with an imperfect act of contrition. But a non-member in serious sin—even though at one time he had attained habitual grace through baptism of desire—must evoke a perfect act of contrition in order to regain the state of grace, and remains "deprived of so many precious gifts and helps from heaven, which one can enjoy only in the Catholic Church."⁴⁸

POINT IV: Limitation of the Terms "Church" and "Mystical Body" to the Church Militant

This last point is perhaps the hardest one to demonstrate from the explicit teaching of the Encyclical. To some extent, it is a corollary of the third point, since only the faithful on earth possess all three conditions of baptism, faith and submission to ecclesiastical authority. Now, it is clear not only

⁴⁶ Cf. Matt. 18. By way of example, Christ did not expel Judas from the Apostolic College even after his treachery had been exposed at the Last Supper.

⁴⁷ *Sermo* 137. PL, XXXVIII, 754.

⁴⁸ *Mystici Corporis*, n. 100.

from the texts already cited from the *Summa Theologiae*, but also from St. Thomas's *In Symbolum Apostolorum Expositio*, that the Angelic Doctor uses the words "Church" and "Mystical Body" to include not only the Church Militant, but also the Church Suffering and the Church Triumphant:

Concerning the third, it must be known that the Church is Catholic, that is, universal, and firstly, relative to place since it is worldwide. . . . The Church has three parts: one is on earth, the other is in heaven, and the third is in purgatory.⁴⁹

This concept of the Church is in accord with his notion of grace as the specifying element of membership. Logically, St. Thomas admits that the angels are members of the Mystical Body only by analogy (*similitudinarie*); they are ordered to the same goal as men—the Beatific Vision—yet they lack the primary fundament of Church membership, human nature elevated by the grace of Christ. Because they have not been redeemed by Him, they do not depend upon His merits in any essential way.⁵⁰ On the other hand, St. Thomas makes the blessed in heaven the most perfect members of the Mystical Body (*primo et principaliter*) since they share most fully in His grace and merits through the Beatific Vision.⁵¹

Here again it is evident, especially in the light of the Encyclical, that St. Thomas is using the terms "Church" and "Mystical Body" analogically. The goal of all Christians is the Beatific Vision: that most intimate, face-to-face union with the Blessed Trinity in heaven. The Church is the divinely established *medium* which prepares us for this perfect union with God through incorporation into Christ's Mystical Body. But wonderful as it is, this union with Christ is nevertheless imperfect and incomplete, depending on faith, and lacking the

⁴⁹ *Opusc.* VII, a. 9. "Circa tertium sciendum est, quod Ecclesia est catholica, idest universalis, primo quantum ad locum, quia est per totum mundum. . . . Habet autem haec Ecclesia tres partes. Una est in terra, alia est in coelo, tertia est in purgatorio." It is interesting to note that in his commentary on the Communion of Saints in this same work St. Thomas does little more than summarize the effects of the seven sacraments in their role as channels of grace from Christ to men.

⁵⁰ Cf. *Summa Theol.*, *loc. cit.*; III Sent., 13, q. 2, a. 2; *De Verit.*, q. 29, a. 7, ad 5.

⁵¹ *Summa Theol.*, III, q. 8, a. 3.

security of the life of heaven. Even more significant is the fact that, whereas the Church Triumphant is an *invisible* society (at least until the general judgment), the Church Militant is essentially a *visible* society.

To deny the identity of these two societies is in no way to deny that grace is the internal, vivifying bond in both of them. Nor is it to deny that Christ is the Head of both societies. It is simply asserting that Christ is Head of the blessed in heaven in a way different from His headship over the Mystical Body. In the latter case, a different formality is involved, namely, the presence of external, visible bonds uniting men to Christ and with each other. In the case of the Church Triumphant, on the other hand, the blessed are joined immediately to the divine essence in an essentially invisible union.

While it is true that the souls in purgatory depend upon faith for their supernatural knowledge of God, still they have ceased to be subjects of the Church Militant. It is for this reason that indulgences are applied to them by way of suffrage rather than by way of absolution.⁵² Lacking the third condition requisite for membership, they, too, may be classed as members of the Mystical Body only in an analogical sense. We might sum it up in this way: the blessed in heaven and the souls in purgatory are virtually (and therefore eminently) members of Christ's Mystical Body, but not formally so.

Actually, when we speak of the Mystical Body as including the Church Militant, the Church Suffering, and the Church Triumphant, we are referring mere precisely to the Communion of Saints. Strictly speaking, this latter is not an organization; rather, it is an interchange of spiritual goods among the friends of God.⁵³ The "common denominator" among the "members"

⁵² *C. I. C.*, Can. 911. Cf. L. Fanfani, O. P., *Manuale Theorico-Practicum Theologiae Moralis*, (Roma, 1951). IV, n. 740. It cannot be demonstrated from n. 98 of the *Mystici Corporis* that the Pope in asking for a memento for the souls in purgatory intends to include them as members of the Mystical Body since he also includes a request for prayers in behalf of catechumens in the same paragraph.

⁵³ This thesis is carefully elaborated in Gruden, *op. cit.*, pp. 313-319. On page 320 he gives a comprehensive chart distinguishing the three "Churches," followed by a detailed explanation.

of this union is charity, so that all of those actually in the state of grace participate in the exchange. Hence, mortal sin excludes a person from this union, although it does not exclude him from the Mystical Body. Furthermore, the Communion of Saints admits of degrees of "belonging," determined by one's proximity to salvation: the blessed in heaven are the most perfect members, already possessing God; the souls in purgatory come next, being assured of salvation in the inamissible possession of grace and charity; finally come those faithful in the state of grace, who possess the "seed of glory" and need but persevere in this state until death. It is the peculiar role of that marvelous organism which we call the Mystical Body to generate and to nourish this seed unto final perseverance. Our physical incorporation into Christ's very own life is a kind of insurance against anything which would separate us from Him, and provides a means whereby His members may readily rise should they have the misfortune to fall into serious sin.⁵⁴

Finally, it should be noted that the Holy Ghost is present in the Mystical Body in a more substantial manner than in the Communion of Saints. As Fr. Gruden points out, He is present in the Mystical Body as its soul or *informing principle*, whereas He is present in the Communion of Saints through His Gifts and graces to the *individual* "members." He is its "spirit" in a loose sense, but it would not be accurate to call Him its *soul*.⁵⁵

Nor can we admit, in the light of *Mystici Corporis*, that Abel and the Patriarchs of the Old Testament were members of the Mystical Body in a univocal sense. While it is true that they had the same faith and charity as we do,⁵⁶ they lacked the threefold visible bond which unites Christians to Christ. Only in a broad sense were the Patriarchs members of the Church of Christ, for He said of the greatest of them:

⁵⁴ Cf. John L. Murphy, *op. cit.*, pp. 53-55.

⁵⁵ Gruden, *op. cit.*, pp. 160-162.

⁵⁶ *Summa Theol.*, III, q. 8, a. 3, ad 3. Since charity is the principal fundament of his division of membership, he can state with perfect consistency: ". . . et ita patres antiqui pertinebant ad idem corpus Ecclesiae ad quos nos pertinemus." However, in q. 70, a. 4 he concedes that circumcision did not imprint a character on the soul. Cf. also, III *Sent.*, d. 13, q. 2, a. 2, qcla. 2, ad 4.

Amen I say to you, among those born of women there has not risen a greater than John the Baptist; yet the least in the kingdom of heaven is greater than he.⁵⁷

Here the comparison is not of individuals, but of categories: the Old Testament is being compared with the New Testament. Precisely as representing the Old Testament, St. John the Baptist is said to be less in dignity (but not sanctity) than the least Christian, because of the generic superiority of the New Testament over the Old. It is a question here not merely of degree, but of kind. The New Testament was not to be simply a continuation of the Old, but its fulfillment.⁵⁸ The contrast between the two Testaments is shown very succinctly in the Prologue of the Fourth Gospel: "For the Law was given through Moses; grace and truth came through Jesus Christ."⁵⁹ In his Epistles, St. Paul frequently emphasizes the dichotomy between the Old and the New Laws.⁶⁰ Finally, the Holy Father insists in his Encyclical, *Mystici Corporis*, that the Mystical Body began with the death of Christ on the Cross:

For the divine Redeemer began the building of the mystical temple of the Church when by His preaching He announced His precepts; He completed it when He hung glorified on the Cross; and He manifested and proclaimed it when He sent the Holy Ghost as Paraclete in visible form on His disciples.⁶¹

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⁵⁷ Matt. 11:11.

⁵⁸ Cf. Dom Bernard Orchard & Others, *A Catholic Commentary on Holy Scripture*. (London, 1953). Col. 694d. This interpretation differs from that of St. Thomas in his commentaries on this passage in the Gospels of St. Matthew and St. Luke. Our Lord hinted at the implications of this fulfillment when he rejected the Pharisees' fasting traditions with the comment: "No one pours new wine into old wine skins; else the wine will burst the skins, and the wine is spilt, and the skins will be ruined. But new wine must be put into fresh skins." (Mark 2:22).

⁵⁹ John 1:17. In his *St. John's Prologue*, (Westminster, 1957), pp. 62-64, M. E. Boismard, O.P. concludes this meaning from the passage: "Grace and fidelity began to be by Jesus Christ." Cf. also pp. 135-145.

⁶⁰ Especially in the third and fourth chapters of his Epistle to the Galatians. He compares the subjects of the Mosaic Law to *slaves*, and those under the New Law to *sons and heirs* (Gal. 4:1-7).

⁶¹ *Mystici Corporis*, n. 26. Cf. also nn. 27-33.

Having considered in detail the four points listed at the beginning of this article, we should, perhaps, make a brief summary of our conclusions, all of which center around the question, "Who are members of the Mystical Body of Christ?" In the light of the clarification provided by *Mystici Corporis* and treated of in these pages, I offer the following division, which, I believe, answers the question according to the mind of Pius XII:

THE MYSTICAL BODY OF CHRIST

(Division of members according to the Encyclical *Mystici Corporis*.)

I MEMBERS:⁶² Those who possess the triple bond: 1.) baptism of water; 2.) external profession of the true faith; 3.) submission to the Roman Pontiff.

A. *Active Members*: Those just individuals who possess all three of these conditions, together with charity (Catholics in the state of grace). "But if the bonds of faith and hope, which bind us to our Redeemer in His Mystical Body are weighty and important, those of charity surely are no less so." (n. 72).

B. *Paralyzed Members*: Those *sinners* who, though retaining the three conditions, have lost charity. (Cf. quotation from n. 23 under Point III in connection with Pius XII's inclusion of sinners.) "... but if anyone unhappily falls and his obstinacy has not made him unworthy of communion with the faithful, let him be received with all affection . . . [as] a weak member of Jesus Christ." (n. 24)¹.

II NON-MEMBERS:⁶³ Those who lack one or more of the three conditions of the triple bond.

⁶² *Ibid.*, n. 22. "Only those are really to be included as members of the Church who have been baptized and profess the true faith and who have not unhappily withdrawn from Body-unity or for grave faults been excluded by legitimate authority." His Holiness does not employ the terms "active" and "paralyzed" members; however, they seem best suited to convey the important distinction he makes between those who possess charity and those who lack it.

⁶³ All persons in this division may be considered "potential" members of the Mystical Body, in contrast to the true or "actual" members in the other division. Following the example of the Pope, I have avoided these two terms.

A. "Related" to the Mystical Body through an extraordinary union.⁶⁴

1. *Material heretics and schismatics*: Baptized non-Catholic Christians, so long as they remain sincerely ignorant of the true faith, and "follow the interior movements of grace." (n. 100).
2. *Infidels and Jews*: Unbaptized persons who have turned to God by a perfect act of contrition, but "who, not yet perceiving the light of the Gospel's truth, are still without the Church's safe fold. . . ." (n. 99).

B. Not "Related" to the Mystical Body:

1. *Baptized* persons who have severed their union with the Church.⁶⁵
 - a.) *Formal heretics and apostates* who have severed the bond of faith.⁶⁶
 - b.) *Schismatics* who have culpably "withdrawn from Body-unity." (n. 22).
 - c.) *Excommunicated* "*vitandi*."⁶⁷
2. *Unbaptized* individuals who culpably reject baptism. "And so if a man refuse to hear the Church, let him be considered,—so the Lord commands—as a heathen and a publican." (n. 22).

⁶⁴ Surely Pius XII had those in this division in mind when he said: ". . . We have committed to the protection and guidance of heaven those who do not belong to the visible organization of the Catholic Church. . . . For even though unsuspectingly they are related to the Mystical Body of the Redeemer in desire and resolution, they still remain deprived of so many precious gifts and helps from heaven, which one can only enjoy in the Catholic Church." (*Mystici Corporis*, n. 100).

⁶⁵ Severance of union with the Church would seem to demand some *external* mark of disbelief or rebellion, in keeping with the visible nature of the Mystical Body, about which *Mystici Corporis* declares: "Now since this social body of Christ has been designated by its Founder to be visible, this cooperation of all its members must also be externally manifest through their profession of the same faith, and the sharing of the same sacred rites . . ." (n. 68). Cf. *C. I. C.*, Can. 2242 § 1.

⁶⁶ "It follows that those who are divided in faith or government cannot be living in one Body such as this, and cannot be living the life of its one divine Spirit." (*Mystici Corporis*, n. 22). Cf. *C. I. C.*, Can. 2314.

⁶⁷ These are they who have the Pope says "for grave faults been excluded by legitimate authority," n. 22. The more common opinion is that not all excommunicated Catholics, but only those designated as *vitandi* by the Holy See lose membership in the Mystical Body. Cf. H. A. Ayrinhac and J. P. Lydon, *Penal Legislation in the New Code of Canon Law*. (New York, 1944), p. 86.

CONCLUSION

Are we to conclude that these clarifications and distinctions are merely a matter of terminology, or, at best, little more than technicalities? It would seem not, since His Holiness, Pius XII, deemed the subject of sufficient importance to warrant a fifty-six page encyclical. In fact, the points raised by the Pope have some rather profound dogmatic implications, revolving about the defined truth that "outside the Church there is no salvation." To quote the classic words of Pope Boniface VIII:

Unam sanctam Ecclesiam catholicam et ipsam apostolicam urgente fide credere cogimur et tenere, nosque hanc firmiter credimus et simpliciter confitemur, extra quam nec salus est, nec remissio peccatorum. . . . Porro subesse Romano Pontifici omni humanae creaturae declaramus, dicimus, definimus et pronuntiamus omnino de necessitate salutis.⁶⁸

The distinction formerly made between the body and soul of the Church was most convenient; it neatly harmonized the necessity of the Church in general with the particular problem of the salvation of sincere and invincibly ignorant individuals. The only difficulty was that such a notion of the soul of the Church usurped the function of the Holy Ghost, and destroyed the unity of the Mystical Body. But now, in the light of the Encyclical, *Mystici Corporis*, and a recent response of the Holy Office, this distinction is neither helpful nor warranted. These two documents furnish us with the following three clues to what, in the final analysis, involves a mystery of faith:

1. There is no doubt but what one who deliberately refuses to join or to remain in the Catholic Church, once he is convinced of its necessity, cannot be saved. Thus, formal heretics, schismatics, and apostates who stubbornly die in their error, preclude salvation for themselves. As the Holy Office puts it:

Therefore, no one will be saved who, knowing the Church to have been divinely established by Christ, nevertheless refuses to submit

⁶⁸ Bulla, *Unam Sanctam*, 18 November 1302 (Denzinger nn. 468-469).

to the Church or withholds obedience from the Roman Pontiff, the Vicar of Christ on earth.⁶⁹

2. Every individual who reaches heaven is saved through the Roman Catholic Church, the Mystical Body of Christ. Here the nature of the Church's necessity is positively stated. The Mystical Body is not a luxury; it is not merely a convenience; it is not even simply the "official" means of salvation (implying the coexistence of some other "unofficial" means). The Church is strictly necessary for salvation, by the necessity of means as well as of precept. In other words, there is no salvation *apart* from the Church:

Not only did the Saviour command that all nations should enter the Church, but He also decreed the Church to be a means of salvation, without which no one can enter the kingdom of eternal glory.⁷⁰

3. Actual membership in the Mystical Body (via the three conditions laid down in the Encyclical) is the *normal* and only *secure* relationship to the Church whereby one can be assured of salvation. However, the Church may—and does—reach out in some mysterious way to those who, though not actually members, bear an *extraordinary* relationship to her: those whom the Pope describes as being "unsuspectingly related to the Mystical Body. . . ." ⁷¹ This extraordinary relationship, while not constituting membership, does nevertheless represent a type of *union* with the Church, as the Holy Office indicates:

Therefore, that one may obtain eternal salvation, it is not always required that he be incorporated into the Church *actually* as a member, but it is necessary that at least he be united to her by *desire* and *longing*.

The Holy Office goes on to explain this union of desire:

However, this desire need not always be explicit, as it is in catechumens; but when a person is involved in invincible ignorance,

⁶⁹ Letter of the Holy Office to the Most Reverend Richard James Cushing, Archbishop of Boston, August 8, 1949. Latin and English texts published in *American Ecclesiastical Review*, CXXVII (1952), pp. 307-315, Cf. p. 312.

⁷⁰ *Ibid.*, p. 313.

⁷¹ *Mystici Corporis*, n. 100.

God accepts also an *implicit desire*, so called because it is included in that good disposition of soul whereby a person wishes his will to be conformed to the will of God.⁷²

This brings us to a final, practical note. Perhaps more than ever before in the history of the Church is the apostolic nature of Christianity being urged upon Catholics. They are being reminded by Popes and prelates in season and out of season of the obligation implied in the reception of baptism and confirmation to spread the kingdom of God. Now, the success of this appeal for the "participation of the laity in the apostolate of the hierarchy" will be conditioned largely by the demonstrated urgency of bringing non-Catholics into the true fold. If material heretics (who comprise a good number of prospective converts) are looked upon as "invisible members" of the Mystical Body; or if their status as *potential* members is considered to be an equivalent of membership,—or even a positive, quite satisfactory relationship with Christ,—then the impetus to work for their conversion will not be so compelling. On the other hand, if we see them as the Pope pictures them in the Encyclical, i. e., as non-members, very unsure of their salvation, then our zeal will be more readily enkindled toward apostolic action.

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⁷² Letter, *op. cit.*, p. 313. Cf. also Francis J. Connell, C. SS. R., "The Necessity of Membership in the Mystical Body," *Homiletic and Pastoral Review*, LIII (1952-1953), p. 256; and "Invisible Members of the Church?", *American Ecclesiastical Review*, CXXXVIII (1958), p. 67.

THE 'PROBLEM' OF INDUCTION

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THE subject of this paper is the various meanings which the term "induction" may have, and the consequent ambiguity of the so-called "problem of induction." We shall attempt to distinguish many of these meanings from each other, and on the basis of these distinctions to make some suggestions concerning the nature of the "problem of induction" in each case.

In general, induction is the movement of the intellect from the singular to the universal, or from the less universal to the more universal. It is precisely this passage to the universal or the more universal which poses the problem of induction. How is one to justify such a passage? How can we see beyond these particular contingents or these specific types to a more universal necessary intelligibility?

First, we may note that this movement of the intellect takes place on two distinct levels of knowledge: that of the nature, cause, and other aspects of the thing-in-itself;¹ and that of the appearance of this thing-in-itself in the order of operation. Since the first level of knowledge concerns the underlying nature, we shall call the induction which takes place at this level *transphenomenal* induction. Since the second level con-

¹ This is not the Kantian thing-in-itself, which is perhaps most appropriately characterized by its unknowability. Rather, we are thinking of the Thomistic *being* which reveals itself to us through its phenomena, but which nevertheless is other than these phenomena themselves, with an otherness which is subsumed under the scholastic distinction between the order of being and the order of operation.

It should also be noted that we are not distinguishing, in this paper, between the order of essence and the order of existence. Flowing from this distinction are certain fundamental differences within what we shall call *transphenomenal* induction—differences between the induction proper to the philosophy of nature and that proper to metaphysics. We prescind from this point as well as from the distinction between the *analogical* and the *universal*. All intellectual knowledge is here termed "universal."

cerns the observable phenomena, we shall call the induction which takes place at this level *phenomenal* induction.²

I. TRANSPHENOMENAL INDUCTION

In our attempt to intellectually grasp the *being* of things, the first necessity is the transphenomenal *abstractive intuition* of the intellect. If there be no such intuition, the thing-in-itself must become the Kantian thing-in-itself, unknowable to us. But such abstractive intuition is the seeing of a universal necessary intelligibility in the individual contingent sensibles. This is an inductive process, as Aristotle says in the *Posterior Analytics*.³ It is a movement of the intellect, confronted with the singular, to the universal.

But this process of what we may call *abstractive induction* is not properly the concern of logic, but rather of philosophical psychology and metaphysics. Logic requires universal ideas as already given. Its purpose is to examine the relations between such ideas, in formal logic, and their content, in material logic. The work of abstractive induction takes place according to its own laws in the spiritual preconscious⁴ life of the intellect. The "problem of induction" here is the traditional metaphysical "problem of universals" and the psychological problem of the agent intellect.

The ideas yielded by abstractive induction may, however, fall into two classes. Some there are which bear evident necessary relations to each other. When we consider these, we necessarily judge concerning these relations. The resulting propositions may be regarded as a secondary derivative of abstractive induction. No special movement of the intellect beyond the mere comparison of such ideas is necessary for the formation of these propositions. Such, for example, are propositions like "The whole is greater than its part." Also reducible

² For an elaboration of the distinction between these two levels of knowledge, see Maritain's *La Philosophie de la Nature* (Paris, 1937) or his *Les Degrés du Savoir* (Paris, 1932).

³ *Anal. Post.*, B 19, 100b 3-5.

⁴ For this term see Maritain, *Creative Intuition in Art and Poetry* (New York, 1955), p. 78.

to this type are propositions like "Being is good," which are not immediately evident until the ideas of being and good are very much refined and clarified, but which become immediately evident when the meaning of the terms is clearly seen. Propositions of the first kind are the traditional *per se nota quoad omnes* propositions, while those of the second kind are the *per se nota quoad sapientes* propositions.

We are not suggesting that such ideas fall into the mind as isolated "atoms," which are then related to each other through an entirely new comparison made by the intellect when stimulated by the sense experience of individuals. Rather, such ideas would seem to be, usually if not always, clarifications of earlier, vaguer ideas (and judgments) which contained implicitly the content of both of the later distinct ideas. Thus we have (1) the presence of a vague "atomic" object of thought; (2) the clarified vision revealing that this "atom" is itself "molecular" with reference to other "atoms"; (3) the discernment of necessary relations between some of these "atoms" within the "molecule." This latter step is the *per se nota* proposition. The distinction between the two kinds of *per se nota* propositions noted above arises from the varying degree of difficulty involved in achieving sufficient clarification of the "atoms" within the "molecule" to see necessary relations between them.

Between other ideas, however, no such necessary relation can be seen. To establish such a relation it is necessary for reason to discourse. Sometimes this discourse takes place through a genuine universal middle term in a categorical syllogism. At other times we can only establish the relation through direct reference to the particulars themselves, in which these ideas are realized. Such a process of establishing a universal proposition through the particular instances is called by Aristotle "induction"⁵ and the "syllogism which springs out of induction."⁶ It is called "induction" because there is a movement from the particular instances to the universal proposition. It is called "syllogism from induction" because it can be ex-

⁵ *Anal. Priora*, B 23, 68b 15.

⁶ *Anal. Priora*, B 23, 68b 15-16.

pressed in the form of premisses necessitating a conclusion, thus falling under Aristotle's general definition of syllogism.⁷

The structure of such a syllogism is outlined by Aristotle in a brief text as follows:

Now induction, or rather the syllogism which springs out of induction, consists in establishing syllogistically a relation between one extreme and the middle by means of the other extreme, e. g. if B is the middle term between A and C, it consists in proving through C that A belongs to B. For this is the manner in which we make inductions. For example let A stand for long-lived, B for bileless, and C for the particular long-lived animals, e. g. man, horse, mule. A then belongs to the whole of C; for whatever is bileless is long-lived. But B also ('not possessing bile') belongs to all C. If then C is convertible with B, and the middle term is not wider in extension, it is necessary that A should belong to B. For it has already been proved that if two things belong to the same thing, and the extreme is convertible with one of them, then the other predicate will belong to the predicate that is converted. But we must apprehend C as made up of all the particulars. For induction proceeds through an enumeration of all the cases.⁸

The process of reasoning that Aristotle describes here may be put as follows:

Every C is A.
Every C is B.
Therefore every B is A.

Because this induction is a genuine discursive process, and not intuitive as is abstractive induction, we can call it *rationative induction*. But this ratiocinative induction is greatly restricted in its sphere of application. Aristotle has pointed out the necessity for a *complete enumeration* of all the particulars which are B in order to say "Every B is A." Except in cases which are of no great importance such complete enumeration is usually impossible. Yet where we have only *incomplete enumeration*, we cannot have a genuine formal consequence;

⁷ *Anal. Priora*, A 1, 24b 18-20: "A syllogism is discourse in which, certain things being stated, something other than what is stated follows of necessity from their being so." (Oxford trans.)

⁸ *Anal. Priora*, B 23, 68b 15-29 (Oxford trans.).

for the consequence here rests on the convertibility of C with B, which in turn rests on complete enumeration.

It would appear that any incomplete enumeration is insufficient to draw a conclusion. If we are considering the formal consequence, this must be conceded. Some have attempted to save this formal consequence by resorting to the notion of a "virtually complete enumeration."⁹ This is a special condition on the side of the matter, described by Maritain as follows:

It is apparent, then, that *when the enumeration of parts is taken as sufficient*, the mind can and must conclude from the parts to the whole. For in supposing that the enumeration is "sufficient" we are in fact supposing that we know that the enumerated parts are really represented in relation to the predicate in question by the universal which we are considering and not by another. (For this reason the ancients considered induction by sufficient enumeration as induction by *virtually complete enumeration*.)¹⁰

But this does not save the formal consequence, as Maritain believes.¹¹ If we now *see* that B is essentially related to C with respect to A, we must also *see* the necessary relation of B to A. But this brings us back once again to abstractive induction. The presupposition of genuinely ratiocinative induction is that the relation between subject and predicate in the conclusion is not seen but *inferred* (through particular instances, however, and not through a middle term in the strict sense).

On the other hand, if we do not *see* that B is essentially related to C with respect to A, we cannot be certain that we have a sufficient enumeration in C unless we have included every B. Thus there can be no valid inductive syllogism in virtue of a "virtually complete enumeration."

Nevertheless, an incomplete enumeration may be sufficient for a "probable proposition." But the degree of probability, while resting on the number of instances enumerated, also rests on the kind of matter with which we deal. The examination of

⁹ Jacques Maritain, *Formal Logic* (New York, 1946), p. 275.

¹⁰ *Ibid.*

¹¹ *Ibid.* It should be noted that no condition *on the side of matter* can ever be said to account for a *formal consequence*.

fifty random instances may be sufficient to state with some probability that "Wood is combustible"; but it would not be sufficient to state with much probability at all that a vaccine actually prevents some disease. We are speaking here of probability in the sense of "expectancy," of our subjective conviction that the proposition is true. Objective probability is a concept which is not applicable in the discussion of transphenomenal induction. Thus in transphenomenal induction we do not have a "logic of probability." Rather, we employ a kind of speculative prudence, an analogue of the prudence which we employ in the moral order.

There is one further type of transphenomenal induction, which we may term *constructive induction*. When, in our study of the physical universe, we reach the point where we are unable to see the specific determinations of things, we construct a philosophical myth, a representation of what the nature of things *might* be like.¹² This construction is not a mere dream of the philosopher. At every stage of its development, there is, or should be, close attention to the observable characteristics of things. Aristotle's *De Caelo* may be taken as an excellent example of such a "philosophical myth."¹³ Today, it is of utmost importance for the philosopher of nature to construct such myths with close attention to the present state of physical science. For this physical science approaches the nature symbolically, through the use of constructions which bear some analogy to the real nature, although they themselves are irreducibly *perinoetic*. The philosopher of nature should take advantage of these oblique, analogous and symbolic views of the nature of the physical world, thereby strengthening the foundation in things (*fundamentum in re*) for his ideal construction (*ens rationis*) at the mythical level of the philosophy of nature.

We have had numerous examples of such philosophical

¹² See my article, "'Integrated' Knowledge of Nature," in *THE THOMIST*, XXI (1958), pp. 171-183.

¹³ This does not mean that Aristotle himself realized the mythical character of this work.

myths, most of them, unfortunately, from non-scholastic philosopher-scientists.¹⁴ Among scholastics, most of the work still needs to be done. We have seen few attempts to provide a worthy replacement for the long outmoded myths of the *De Caelo* and its medieval counterparts. Some valuable work has been done; but too frequently it is dominated by a tendency to rehabilitate as much as possible of the Aristotelian myth without the spirit of originality called for by the modern discoveries in the natural sciences. Sometimes too, the mistake of Aristotle is repeated, and the mythical nature of the constructions is overlooked.

This mythical construction must be said to be an inductive procedure. Here we are speculating about the nature of things, but this speculation is always governed by our *experience*. Thus we are rising, by a constructive method, from the particular to the universal.¹⁵ We call this process transphenomenal *constructive induction*. This type of induction presupposes both abstractive and ratiocinative induction.

To summarize the diverse types of transphenomenal induction, we may use the following table:

¹⁴ See, for example, A. S. Eddington's *The Expanding Universe* (Cambridge, 1952) and *The Nature of the Physical World* (New York, 1929); J. Jeans' *The Mysterious Universe* (New York, 1930) and *Physics and Philosophy* (New York, 1943); F. Hoyle's *Frontiers of Astronomy* (New York, 1955).

We find philosophical myths especially concerning the findings of astronomy (and astrophysics), that science which Aristotle tells us is, of all mathematical sciences, the "nearest to philosophy." While his astronomy was a science entirely different from modern astronomy, the same point might still be significant today.

¹⁵ Note, however, that this ascent requires the intermediacy of abstracted *elements* of construction. Thus the constructively inductive ascent has a twofold dependence on the experience of particulars. First, the *elements* of construction are abstracted from particulars. Second, the *direction* of the constructive process is ultimately from our experience of particulars. The same, of course, could also have been said, *mutatis mutandis*, concerning the *elements* and *direction* of the ratiocinative inductive process.

Transphenomenal induction

Abstractive induction

of universal ideas —————→ universal propositions

immediately seen to be necessarily related } —————→ { propositions *per se*
nota to all

seen through reflective clarification to be necessarily related } —————→ { propositions *per se*
nota to the learned

not seen to be necessarily related

... but these are related through

→ *Ratiocinative induction*

through complete enumeration —————→ *certain* propositions

through incomplete enumeration —————→ *probable* propositions

Constructive induction of hypothetical natures, where abstractive induction is blocked.

II. PHENOMENAL INDUCTION

Just as in our knowledge of the *being* of things, so also in the study of their *phenomena*, we first need an *abstractive intuition*. If there is no abstractive intuition of the phenomenon, there can be no possibility of relating the abstract theoretical constructions of modern science to the concrete observable to which they are meant to refer. Here again, such abstractive intuition is not the concern of logic, but rather is presupposed to logic.

But this abstractive intuition of the phenomenal flux, or, we may say, *abstractive induction* from the phenomenal flux, yields ideas which are not necessarily related to each other at all.¹⁶ The constructive activity of the intellect is required to see a pattern in the phenomena. Complex concepts are constructed by the intellect out of the primitive simple concepts, e. g., the concepts of mass or of energy insofar as these are resolvable into

¹⁶ We may note the foundation, in this domain, for the Humean conception of human experience. See David Hume, *An Inquiry Concerning Human Understanding*, ed. C. W. Hendel (New York, 1955), V, p. 56.

measurable quantities given in sense-experience. These complex concepts provide a framework in which to view the phenomenal flux. But the complex concepts must be related to each other by laws (e. g., the laws of mechanics, like $F = ma$), laws which are in a sense the fruit of these somewhat arbitrarily constructed complex phenomenal concepts. Given a set of concepts, a set of laws will follow. But this set of laws itself must be arrived at or confirmed by a *ratiocinative induction* through incomplete enumeration from the comparison of the instances in which the concepts are applied.

Such ratiocinative induction, however, as we see, presupposes the constructive activity in the formation of the complex concepts. This introduces an *a priori* element into the very materials of the ratiocinative induction. The probability attained is, from the point of view of science itself, a kind of *subjective expectancy*, not an objective probability. It is on this level of thought that we can locate the induction which the canons of Bacon and Mill concern, after suitable criticism.

The dominance of speculative construction appears clearly here in the consideration of the interaction between the processes of constructing concepts and reasoning to laws. We ordinarily construct our concepts in order to obtain simple laws which correspond to the flux of real phenomena. We may say that both concept and law are constructed in the same activity. The ratiocinative induction which takes place here is a part of the overall process of construction.

We have another level of construction, in the study of phenomena, on the level of theory. The theoretical level is the most artificial level in modern science. Here our principal materials are not obtained in abstractive intuition of the phenomenal real.¹⁷ Therefore reality is normative in the construction of a theory only in a very indirect manner. However, our experience of the phenomenal flux still regulates the evolution of the

¹⁷ Here there is question primarily of logical and mathematical conceptions, and only secondarily of the qualitative images and conceptions which enter into the construction of the physical model.

abstract theory, in that it is precisely this phenomenal flux which the theory seeks to unify.¹⁸

Thus, all of the constructive activity of the modern sciences of phenomena is a movement to more and more complex abstract structures, which are yet always subject to the regulation of experience. Thus, we may say that there is here a passage from the particular to the universal, an inductive process. But this inductive process in itself does not take place by way of insight or by way of ratiocination, but rather by way of a free constructive process—constructive but not unregulated. We may term this form of induction phenomenal *constructive induction*.

Is there then a "logic of induction" for modern science, outside of the ratiocinative induction which we have already noted above? In so far as the constructive activity of the intellect is here subjected to certain artificial rules, we may have such a logic. But this is not a formal logic at all; rather, it is a material logic, a logic the rules of which entirely concern the matter of propositions.

However, side by side with this "logic of induction," there must be a "logic of deduction" for modern science. For the primary value of the constructions of modern science is that they enable us to deduce the phenomena. But this logic of deduction must be characterized by complex constructed premisses and perhaps even "conventional" rules of reasoning, rather than by the rules of reasoning of traditional logic, which have in some way a "natural place" in the mind. The modern constructed logics have their special value in this domain of constructed science.

¹⁸ Such regulation by the phenomena would at least exist *historically*, even if it were possible to see now how all the laws are deducible from certain primitive ideas originating in our very *approach* to these phenomena. Such an *a priori* notion of physical theory has been put forth by A. S. Eddington in *The Philosophy of Physical Science* (Cambridge, 1949). However, such a thoroughly *a priori* procedure must be ruled out; for the phenomenal measurements represent a physical datum transcending our intellects, at least in part, and controlling our conjectures. How many ugly facts have destroyed beautiful theories! Yet, perhaps, Eddington's *a priori* has a place on the most general levels of physics (in subordination—not subalternation—to the philosophy of nature).

The logic of modern science, however, cannot insist very strongly on the sharp distinction between the inductive and deductive movements of the mind, after the manner of traditional logic. In modern science, the constructive induction of a theory is always accomplished with reference to the world of individuals. This necessitates a back-and-forth motion of the intellect, an induction followed by a deduction followed by further induction, etc.

We can locate all the types of induction described above in a simple scheme:

	<i>Phenomenal</i>	<i>Transphenomenal</i>
<i>Abstractive</i>	simple concepts of phenomena	concepts of natures, <i>per se nota</i> propositions
<i>Constructive</i>	complex concepts of phenomena, theories	constructed "mythical" natures
<i>Ratiocinative</i>	scientific laws	universal propositions which are not <i>per se nota</i>

III. "PROBLEMS" OF INDUCTION

We have then several distinct types of induction, each with its own peculiar problems. Transphenomenal induction has, in fact, been the chief concern of scholastic logic, metaphysics, and psychology. Indeed, some scholastics have attempted to account for all inductive procedures in terms of transphenomenal induction.¹⁹ This can be traced to their rejection of an intellectual knowledge terminating in the very phenomena themselves.

The problems of transphenomenal abstractive induction have already been identified with the metaphysical problem of universals and the psychological problem of the origin of ideas. The problem of transphenomenal ratiocinative induction, once the possibility of complete enumeration is set aside, is the problem of how to judge when an enumeration is sufficient for some degree of probability. This would seem to be the concern

¹⁹ See, for example, V. E. Smith, *Elements of Logic* (Milwaukee, 1957), pp. 156-168.

of some kind of speculative prudence—a mean between hasty generalization and undue hesitancy in judging. Transphenomenal constructive induction has even more of the nature of art than does the discursive portion of ratiocinative induction. The problem here is to lay down rules to follow—rules which will be somewhat akin to Newton's Rules of Reasoning in Natural Philosophy. But these rules will concern precisely that domain of "hypotheses" which Newton was unwilling to enter at any great length in the *Principia*.

Phenomenal abstractive induction presents problems parallel to those of transphenomenal abstractive induction. The problems of phenomenal ratiocinative and constructive induction greatly concern the laying down of rules of procedure. But perhaps the most provocative problem posed by these latter types of induction lies in the fact that they *work*, that, after we have made our constructions and reasonings, we are really able to predict what we will observe and to verify these predictions.

It is the presence of this fact which links together transphenomenal and phenomenal induction. The presence of an *order* in the phenomena is ultimately attributable to the *order of nature*, which itself produces the phenomena. Transphenomenal induction enables us to attain to the ontological principles of the order of nature, with clear vision of some principles and with hypothetical construction of other more detailed principles. Phenomenal induction enables us to unify, through extrinsic constructed non-ontological principles, the manifold of phenomena produced by the order of nature. Thus, transphenomenal induction provides the principles of *ontological* science of nature, while phenomenal induction provides the principles of *empiriological* science of nature.

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THE THOMISTIC DOCTRINE OF THE THREE DEGREES OF FORMAL ABSTRACTION

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THE PROBLEM

THERE is current controversy among Thomists as to the Thomistic authenticity of the doctrine of intellectual abstraction as presented by Cajetan and John of St. Thomas.¹ According to these traditional commentators there is, first of all, a twofold distinction between total abstraction (*abstractio totalis*, the abstraction of a logical whole from its subjective parts) and formal abstraction (*abstractio formalis*, the abstraction of an intelligible object from the matter which shrouds its intelligibility). There is, further, a threefold distinction between types of formal abstraction (each depending upon the distinct degree of matter from which the intelligible

¹ It is not the purpose of this paper to trace the development of this controversy. However, it may be fitting, for purposes of orientation, to indicate some of the literature contributing to it. Principal among the earlier articles on it were these three: L.-M. Regis, O.P., "La Philosophie de la Nature. Quelques apories," *Etudes et Recherches*, Cahier I: Philosophie (1936), 127-156; L.-B. Geiger, O.P., "Abstraction et separation d'après S. Thomas," *Revue des Sciences Philosophiques et Theologiques*, XXXI (1947), 3-40; J.-D. Robert, O.P., "La Metaphysique, science distincte de toute autre discipline selon S. Thomas d'Aquin," *Divus Thomas*, L (1947), 206-222. These were followed shortly by two significant articles: M.-V. Leroy, O.P., "*Abstractio et separatio* d'après un texte controversé de Saint Thomas (In Lib. Boeth. de Trin., V, 3 & 4)," *Revue Thomiste*, XLVIII (1948), 328-339; M.-D. Philippe, O.P., "Abstraction, addition, separation dans la philosophie d'Aristote," *Revue Thomiste*, XLVIII (1948), 461-479. More recent articles on the subject include: F. G. Connolly, "Science vs. Philosophy," *The Modern Schoolman*, XXIX (1952), 197-209, and "Abstraction and Moderate Realism," *The New Scholasticism*, XXVII (1953), 72-90; V. Smith, "Abstraction and the Empiriological Method," *Proceedings of the American Catholic Philosophical Association*, XXVI (1952), 35-50; G. Van Riet, "La theorie thomiste de l'abstraction," *Revue Philosophique de Louvain*, L (1952), 353-393; P. Merlan, "Abstraction and Metaphysics in St. Thomas' *Summa*," *Journal of the History of Ideas*, XIV (1953), 284-291; W. Kane, O.P., "Abstraction and the Distinction of the Sciences," *The Thomist*, XVII (1954), 43-68; E. Simmons, "In Defense of Total and Formal

object is abstracted). Total abstraction is common to all the sciences, while each type of formal abstraction is proper to a distinct level of science as specificative of that level. Physical abstraction, the first degree of formal abstraction, is proper to natural science; mathematical abstraction, the second degree of formal abstraction, is proper to mathematics; and metaphysical abstraction, the third degree of formal abstraction, is proper to metaphysics.²

Many have questioned the Thomistic authenticity of this presentation on the basis of St. Thomas' own presentation of the doctrine in the third article of the fifth question of his *Commentary on the De Trinitate of Boethius*. In this highly significant and somewhat controversial article St. Thomas begins by distinguishing between abstraction, generally taken, according to simple apprehension and according to negative judgment. He calls the first an abstraction, strictly taken, and the second a separation. He further distinguishes between

Abstraction," *The New Scholastism*, XXIX (1955), 427-440; F. Cunningham, S. J., "A Theory on Abstraction in St. Thomas," *The Modern Schoolman*, XXXV (1958), 249-270. A highly significant brief treatment of the problem is found in J. Maritain, *Existence and the Existent*, trans. L. Galentiere and G. Phelan (New York, 1948), pp. 28-30, note 14. Other notes are found in G. Klubertanz, S. J., *The Philosophy of Nature*, p. 400, note 19; F. Wilhelmssen, *Man's Knowledge of Reality* (Englewood Cliffs, N. J., 1956), pp. 194-195, note 3. Extended treatments are found in E. Simmons, *The Thomistic Doctrine of Abstraction for the Three Levels of Science: Exposition and Defense* (University of Notre Dame doctoral dissertation, 1952, published by University Microfilms, Ann Arbor, Mich.); F. Wilson, S. J., *The Modes of Abstraction According to St. Thomas Aquinas* (Georgetown University doctoral dissertation, 1949, unpublished).

² Cajetan, *In De Ente et Essentia*, prooem., q. I (Marietti): ". . . duplex est abstractio per intellectum, scilicet qua formale abstrahitur a materiali, et qua totum universale abstrahitur a partibus subjectivis . . . primam voco abstractionem formalem, secundam vero voco abstractionem totalem, eo quia quod abstrahitur prima abstractione, est ut forma ejus, a quo abstrahitur. Quod vero abstrahitur secunda abstractione, est ut totum universale respectu ejus a quo abstrahitur . . . penes diversos modos abstractionis formalis scientiae speculativae diversificantur. . . Abtractio autem totalis communis est omni scientiae. . . ." Cajetan treats particularly of the division of the sciences into natural science, mathematics, and metaphysics according to the three degrees of formal abstraction in *In Summa Theol.*, I, 1, 3 (Leonine) (cf. *infra*, note 15). John of St. Thomas treats of both the general distinctions and the division of the sciences into the three branches in *Curs. Phil.*, I, *Ars Log.*, II, q. 27, a. 1 (Reiser).

abstractions, strictly taken, which are abstractions of a whole (*abstractio totius*) and those which are abstractions of a form (*abstractio formae*). He then assigns the abstraction of a whole to natural science, the abstraction of a form to mathematics, and separation to metaphysics.³ On the basis of this article it would seem perhaps that for St. Thomas the distinction between total and formal abstraction is in fact the distinction between physical and mathematical abstraction and not, as the Commentators teach, a distinction between an abstraction common to all the sciences and that general type of abstraction which in its specific manifestations respectively specifies each level of science. It seems also that for St. Thomas there are not three types of abstraction specifying respectively the three levels of science, but only two abstractions of this kind, plus separation. And it would seem, finally, that there are

³ *In Boeth. de Trin.*, V, 3, c. (Decker): "... duplex est operatio intellectus. Una, quae dicitur 'intelligentia indivisibilium,' qua cognoscit de unoquoque, quid est. Alia vero, qua componit et dividit, scilicet enuntiationem affirmativam vel negativam formando. . . . Hac ergo operatione intellectus vere abstrahere non potest nisi ea quae sunt secundum rem separata. . . . Sed secundum primam operationem potest abstrahere ea quae secundum rem separata non sunt, non tamen omnia, sed aliqua. . . . Si vero unum ab altero non dependeat secundum id quod constituit rationem naturae, tunc unum potest ab altero abstrahi per intellectum ut sine eo intelligatur, non solum si sint separata secundum rem . . . sed etiam si secundum rem coniuncta sint. . . . Sic ergo intellectus distinguit unum ab altero aliter et aliter secundum diversas operationes; quia secundum operationem, qua componit et dividit, distinguit unum ab alio per hoc quod intelligit unum alii non inesse. In operatione vero qua intelligit, quid est unumquodque, distinguit unum ab alio, dum intelligit, quid est hoc, nihil intelligendo de alio, neque quod sit cum eo, neque quod sit ab eo separatum. Unde ista distinctio non proprie habet nomen separationis, sed prima tantum. Haec autem distinctio recte dicitur abstractio. . . . Et ita sunt duae abstractiones intellectus. Una quae respondet unioni formae et materiae vel accidentis et subiecti, et haec est abstractio formae a materia sensibili. Alia quae respondet unioni totius et partis, et huic respondet abstractio universalis a particulari, quae est abstractio totius, in qua consideratur absolute natura aliqua secundum suam rationem essentialem, ab omnibus partibus, quae non sunt partes speciei, sed sunt partes accidentales. . . . Sic ergo in operatione intellectus triplex distinctio invenitur. Una secundum operationem intellectus componentis et dividitis, quae separatio dicitur proprie; et haec competit scientiae divinae sive metaphysicae. Alia secundum operationem, qua formantur quidditates rerum, quae est abstractio formae a materia sensibili; et haec competit mathematicae. Tertia secundum eandem operationem quae est abstractio universalis a particulari; et haec competit etiam physicae. . . .

not three, nor even two, formal abstractions, but only one, namely, the abstraction proper to mathematics.

Must we then scrap, in the interests of Thomistic authenticity, the traditional distinction of the Commentators between total and formal abstraction on the one hand and between the three degrees of formal abstraction on the other? I suggest that we need not do this. It seems to me that whatever disparity there is between the Commentators and St. Thomas on this point is more terminological than doctrinal. In a previous paper I have attempted to show as much in reference to the first distinction made by the Commentators, i. e., the distinction between *abstractio totalis* (as common to all the sciences) and *abstractio formalis* (as specificative in its three degrees of the three levels of science).⁴ This distinction is simply not the distinction that St. Thomas has in mind when he distinguishes between *abstractio totius*, as belonging to natural science, and *abstractio formae*, as belonging to mathematics. In fact, it is not a distinction explicitly made by St. Thomas, but it is a distinction legitimately called for by the Thomistic notion of human science. Human science, strictly taken, is a knowledge of the real effected in the demonstrative syllogism. In order that the real be scientifically grasped, therefore, it must be yielded to the intellect as intelligible—able to be known—and as communicable—able to take on the logical interrelationships of superiority and inferiority through which syllogism “works.” Formal abstraction, the abstraction of the intelligible object of thought from the matter which shrouds its intelligibility, yields the object as intelligible; and total abstraction, the abstraction of the logical whole from its subjective parts, yields the object as communicable. Accordingly, both total and formal abstraction are demanded by the Thomistic notion of human science, and this, though St. Thomas himself never explicitly makes the distinction and never names these types of abstraction, makes this distinction, explicitly given to us by Cajetan and John of St. Thomas, authentically a Thomistic distinction.

⁴ Cf., *supra*, note 1, “In Defense of Total and Formal Abstraction.”

There remains to be considered the second of the traditional distinctions, i. e., the distinction between the three degrees of formal abstraction as respectively specifying the three levels of science. Can the Commentators legitimately speak of the first degree formal abstraction as specifying natural science, the second degree of formal abstraction as specifying mathematics, and the third degree of formal abstraction as specifying metaphysics when St. Thomas, in the *Commentary on the De Trinitate*, V, 3, speaks rather of a total abstraction (*abstractio totius*) as belonging to natural science, a formal abstraction (*abstractio formae*) as belonging to mathematics, and a separation (*separatio* as distinct from *abstractio*) as belonging to metaphysics? The burden of this paper will be to show that they can, that the traditional doctrine of the three degrees of formal abstraction is completely consonant with the doctrine of *abstractio totius*, *abstractio formae*, and *separatio* as proposed by St. Thomas in the *De Trinitate*.

Inasmuch as the original difficulty seems to be of terminological genesis we will first examine the problem from this point of view in order to show that the carefully chosen expressions of the *De Trinitate* in no way rule out the presentation of the Commentators. Then we shall turn from the terminological issue to the more important doctrinal issue in an attempt to show that the doctrine of the three degrees of formal abstraction, *rightly understood*, faithfully represents the mind of St. Thomas in reference to the specification of the speculative sciences.

THE TERMINOLOGICAL ISSUE

The terminological differences between the presentation of Cajetan and John of St. Thomas on the one hand and St. Thomas in the *Commentary on the De Trinitate*, V, 3, on the other are clearly apparent. That they seem to pose a problem cannot be denied. The Commentators teach that there are three degrees of formal abstraction (*abstractiones*). And St. Thomas teaches, in this article, that there are three types of intellectual distinctions (*distinctiones*), only two of which are

in the strict sense abstractions (*abstractio totius* and *abstractio formae*). St. Thomas teaches that what corresponds to Cajetan's third degree of formal abstraction is not an abstraction in the strict sense but a separation (*separatio*). Because St. Thomas carefully speaks of three distinctions rather than three abstractions, and because he explicitly distinguishes between two abstractions and separation it would seem perhaps that the traditional presentation of the doctrine in terms of the three types of abstraction cannot be accepted as authentically Thomistic.

However, if we accept the fact that the precise terminology of the *De Trinitate* repudiates the teaching of Cajetan and John of St. Thomas, we must as well admit that it repudiates the teaching of St. Thomas himself in many other passages. For St. Thomas does not bind himself to the strict terminology of the controversial article everytime he speaks on the subject of intellectual abstraction. There are numerous passages in which he shows little regard for the precision of expression stressed in the controversial article. These passages fit into several types, including passages in which "abstraction" is used in reference to all three scientific levels, those in which "separation" is used in reference to all three scientific levels, and those in which "abstraction" and "separation" are interchanged indiscriminately. We shall take note of several of these passages in what follows.

Perhaps the most obvious passage in which St. Thomas uses "abstraction" for all three scientific levels is found in the *Summa Theologiae*, I, q. 85, a. 1, ad 2. Here, in answer to an objection made concerning the abstraction especially proportioned to natural science, we find St. Thomas comparing this abstraction with its mathematical and metaphysical counterparts.

The intellect therefore abstracts (*abstrahit*) the species of a natural thing from the individual sensible matter, but not from common sensible matter. . . . Mathematical species, however, can be abstracted (*abstrahi*) by the intellect not only from individual sensible matter, but also from common sensible matter; not however

from common intelligible matter, but only from individual intelligible matter. . . . But certain things can be abstracted (*abstrahi*) even from common intelligible matter, such as *being, unity, potency, act*, and the like, which even can exist without matter, as is evident in the case of immaterial substances.⁵

If St. Thomas had intended in the *De Trinitate*, a work earlier than the *Summa*, to eliminate the possibility meaningfully to speak of abstraction in reference to each of the levels of science he would certainly not have expressed himself as he did in this passage of the *Summa*.

Another passage, typical of the context in which we find it, in which St. Thomas speaks of abstraction in reference to each genus of science and not exclusively to the first and second is found at the very beginning of the *Commentary on the Physics*.

Therefore, it must be known, since every science is in the intellect, that something is intelligible in act insofar as it is abstracted (*abstrahitur*) from matter; thus, insofar as things are diversely related to matter, they pertain to diverse sciences.⁶

In this passage St. Thomas speaks of abstraction *generally* in reference to each level of speculative science just as in the passage previously quoted he speaks of abstraction *particularly* in reference to natural science, mathematics, and metaphysics. Certainly there is no indication in either passage that "abstraction" is used improperly in reference to metaphysics; rather there is positive indication of the propriety of this usage in a Thomistic exposition.

A good example of the second type of passage is found at the beginning of the *Commentary on the De Sensu et Sensato*.

⁵ *Summa Theol.*, I, 85, 1, ad 2 (Leonine): "Intellectus igitur abstrahit speciem rei naturalis a materia sensibili individuali, non autem a materia sensibili communi. . . . Species autem mathematicae possunt abstrahi per intellectum a materia sensibili non solum individuali, sed etiam communi; non tamen a materia intelligibili communi, sed solum individuali. . . . Quaedam vero sunt quae possunt abstrahi etiam a materia intelligibili communi, sicut ens, unum, potentia et actus, et alia huiusmodi, quae etiam esse possunt absque omni materia, ut patet in substantiis immaterialibus."

⁶ *In I Phys.*, I, n. 1 (Marietti): "Sciendum est igitur quod, cum omnis scientia sit in intellectu, per hoc autem aliquid fit intelligibile in actu, quod aliquid abstrahitur a materia; secundum quod aliqua diversimode se habent ad materiam, ad diversas scientias pertinent."

Here St. Thomas clearly reveals his willingness to speak of separation in reference to each level of science. In this passage he uses "separation" explicitly for metaphysics and mathematics and implicitly for natural science.

And since the habits of any potency are distinguished in kind according to a difference in that which is formally the object of that potency, it is necessary that the habits of science, by which the intellect is perfected, be distinguished according to a difference in separation (*separationis*) from matter. Therefore, the Philosopher in the sixth book of the *Metaphysics* distinguishes the genera of the sciences according to the diverse modes of their separation (*separationis*) from matter. For those things which are separated (*separata*) from matter insofar as they exist and insofar as they are known pertain to *metaphysics*; those which are separated (*separata*) insofar as they are known but not insofar as they exist pertain to *mathematics*; and those which in their very meaning include sensible matter pertain to *natural science*.⁷

Not only does St. Thomas on occasion speak of abstraction in connection with each of the three genera of speculative science, and on other occasions of separation with this same general application, but sometimes he speaks indiscriminately of abstraction and separation within the same passage. We find an example of this type of passage in the preface to the *Commentary on the Metaphysics* where St. Thomas uses a form of "separare" in reference to each of the levels of science along with a similar usage of a form of "abstrahere."

Those things are indeed separated (*separata*) from matter to the greatest degree, 'which not only abstract (*abstrahunt*) from individual matter as the natural forms received in the universal about which natural science is concerned,' but from all sensible matter; not only insofar as they are known, as is the case with mathematical

⁷ In *De Sensu et Sensato*, 1, n. 1 (Marietti): "Et quia habitus alicuius potentiae distinguuntur specie secundum differentiam eius quod est per se obiectum potentiae, necesse est quod habitus scientiarum, quibus intellectus perficitur, etiam distinguuntur secundum differentiam separationis a materia; et ideo Philosophus in sexto *Metaphysicorum* distinguit genera scientiarum secundum diversum modum separationis a materia. Nam ea, quae sunt separata a materia secundum esse et rationem, pertinent ad *metaphysicum*; quae autem sunt separata secundum rationem et non secundum esse, pertinent ad *mathematicum*, quae autem in sui ratione concernunt materiam sensibilem, pertinent ad *naturam*."

objects, but also insofar as they exist, as is the case with God and the angels.⁸

As a matter of fact we find this same indiscriminate use of "abstraction" and "separation" in the very article which has most of all occasioned the attack upon the traditional interpretation of St. Thomas by the Commentators. Early in the controversial article in the *De Trinitate*, St. Thomas speaks indiscriminately of abstraction and separation, precisely distinguishing between the use of "abstraction" and "separation" only afterwards.

And since the truth of the intellect consists in a correspondence to reality, it is evident that according to the second operation the intellect cannot truly abstract (*abstrahere*) what is conjoined in reality, because in abstracting (*abstrahendo*) thusly there would be an existential separation (*separationem*) signified, as when I abstract (*abstraho*) man from white by saying 'the man is not white' I signify a separation (*separationem*) in the real. . . . By this operation the intellect can truly abstract (*abstrahere*) only those things which are separated (*separata*) in the real, as when I say 'the man is not an ass.'⁹

Thus St. Thomas himself, not only elsewhere but even in the controversial article itself, indicates a willingness not to restrict himself to the strict terminology which limits "abstraction" to natural science and mathematics and "separation" to metaphysics. In the light of this we must surely admit that we cannot question the Thomistic authenticity of the doctrine of the Commentators *simply* because they speak of three degrees of

⁸ *In Met.*, prooem. (Marietti): "Ea vero sunt maxime a materia separata, quae non tantum a signata materia abstrahunt, 'sicut formae naturales in universali acceptae, de quibus tractat scientia naturalis,' sed omnino a materia sensibili. Et non solum secundum rationem, sicut mathematica, sed etiam secundum esse, sicut Deus et intelligentiae."

⁹ *In Boeth. de Trin.*, V, 3, c.: "Et quia veritas intellectus est ex hoc quod conformatur rei, patet quod secundum hanc secundam operationem intellectus non potest vere abstrahere quod secundum rem coniunctum est, quia in abstrahendo significaretur esse separatio secundum ipsum esse rei, sicut si abstraho hominem ab albedine dicendo: homo non est albus, significo esse separationem in re. . . . Hac operatione intellectus vere abstrahere non potest nisi ea quae sunt secundum rem separata, ut cum dicitur: homo non est asinus."

abstraction without distinguishing terminologically between abstraction and separation.

The apparent terminological difficulty can be resolved in terms of a simple distinction between strict terminology on the one hand and general terminology on the other. Speaking generally we can legitimately use the terms, "abstraction" and "separation," interchangeably, as St. Thomas usually does. But because of a radical difference between the first two types of abstraction or separation, speaking generally, and the third we should be prepared to distinguish in the strict sense between them. St. Thomas does this in the *De Trinitate* by speaking of the first two as abstractions, strictly speaking, and the third as separation, strictly speaking.

There is no doubt that St. Thomas is making an especially strict distinction in the controversial article. To emphasize this he repeatedly uses the term *proprie* when he speaks of separation as distinct from abstraction. The reason for the strict distinction is clearly the fact that he is here bent upon showing that it was precisely a failure on the part of the Platonists to make this distinction which led them into the error of positing the *real existence* of abstract forms and universals.¹⁰ Whenever St. Thomas sees fit pointedly to speak of the difference between abstraction by way of simple and absolute consideration and abstraction by way of composition and division; he does so in a similar context.¹¹ He speaks in each of these instances with his mind on the error of the Platonists, an error best exposed in terms of a strict distinction between types of abstraction generally taken, or, as he expresses it in the *De Trinitate*,

¹⁰ *Ibid.*: "Et quia quidam non intellexerunt differentiam duarum ultimarum (namely, *abstractio totius* and *abstractio formae*) a prima (namely, *separatio*), inciderunt in errorem, ut ponerent mathematica et universalia a sensibilibus separata, ut Pythagorici et Platonici."

¹¹ Cf., *Summa Theol.*, I, q. 85, a. 1, ad 1: here, it is interesting to note, St. Thomas makes this distinction precisely in reference to the error of Plato *without*, however, using the terms "abstraction" and "separation" but speaking rather of a twofold abstraction ("... dicendum quod abstrahere contingit dupliciter. Uno modo, per modum compositionis et divisionis. . . . Alio modo, per modum simplicis et absolutae considerationis. . . .")

between abstraction strictly taken and separation strictly taken. There is nothing more than this to look for in this refinement of doctrine and language. Certainly, the fact that St. Thomas himself, whenever he is not aiming directly at the Platonists, is content to employ the general terminology, which is that employed by Cajetan and John of St. Thomas, should be guarantee enough that there is no conflict necessarily in evidence just because the Commentators do not choose to employ the strict terminology used in the controversial article in the *Commentary on the De Trinitate*.

THE DOCTRINAL ISSUE

It seems evident that we cannot rule out the interpretation of the Commentators on intellectual abstraction as lacking Thomistic authenticity simply because they do not use the terminology of the controversial article in the *De Trinitate*, nor even because their terminology seems contrary to that here used by St. Thomas. Otherwise we should rule out much of what St. Thomas teaches elsewhere as being inauthentic for the same reason; for, as we have seen, St. Thomas, even in his latest work, the *Summa Theologiae*, chooses on occasion to speak, like the Commentators after him, of three types of abstraction analogously alike in that each is proper to a distinct level of speculative science.

But admitting that the presentation of the Commentators cannot be thrown out simply on the basis of some terminological differences, should we not still discard the teaching of the three degrees of formal abstraction as being *doctrinally* at odds with that of St. Thomas? Let us see.

Cajetan and John of St. Thomas teach that the speculative sciences are diversified according to differences in their formal objects, and that these objects differ precisely as objects to the extent to which they abstract differently from matter. Mobile being is the formal object of one branch of speculative science, natural science, as abstracting from individual matter. Quantified being is the formal object of a second branch of speculative science, mathematics, as abstracting from individual and sensi-

ble matter. And being as such is the formal object of the third branch of speculative science, metaphysics, as abstracting from all matter. These three abstractions from matter are known respectively as physical abstraction, mathematical abstraction, and metaphysical abstraction; and they are, as yielding the *formal* objects specificative of the types of speculative science, the three degrees of formal abstraction.¹²

The Commentators expose this doctrine very carefully with the use of several illuminating distinctions. To begin with, of course, they distinguish sharply between the material object and the formal object. The material object is simply the thing known. The formal object is the thing known precisely insofar as it is an object of speculation. They then distinguish a two-fold aspect (*ratio*) within the formal object itself. The first of these is that formality or formal perfection in virtue of which the object is rendered scientifically knowable. This formality is defined as the "character (*ratio*) of the object known which immediately terminates the act of a given scientific habit." It is the scientifically characteristic aspect of the object "from which flows the properties of the subject of this science, and which is, in fact, the middle term of the primary demonstration of this science."¹³ It is precisely that in the object known in virtue of which it is scientifically known. The second aspect (*ratio*) of the formal object is its degree of freedom from matter. This is the "mode of immateriality belonging to the formal object as object, that is, the mode of abstraction and definition proper to it."¹⁴ Sciences are distinguished on the basis of differences in formal objects. Formal objects are form-

¹² Cf. especially Cajetan's exposition in *In Summa Theol.*, I, q. 1, a. 3. John of St. Thomas treats the same matter in *Curs. Phil.*, I, *Ars Logica*, II, q. 27, a. 1.

¹³ Cajetan, *op. cit.*: Cajetan here points out that there is a "duplex ratio obiecti in scientia" and that the first of these is the "ratio formalis obiecti ut res" or the "ratio formalis quae," which is the "ratio rei obiectae quae primo terminat actum illius habitus, et ex qua fluunt passiones illius subiecti, et quae est medium in prima demonstratione."

¹⁴ *Ibid.*: Cajetan teaches that the second aspect of the formal object is the "ratio formalis obiecti ut obiectum" or the "ratio formalis sub qua," which is "immaterialitas talis, seu talis modus abstrahendi et definiendi."

ally objects precisely insofar as they involve that intelligible characteristic or formality in virtue of which they are formal objects. And this formality is precisely a formality making the object object insofar as it involves a distinctive abstraction from matter and a characteristic mode of defining. Because there are three abstractions from matter and corresponding modes of defining (1. abstraction from individual matter and definition with sensible matter, 2. abstraction from individual and sensible matter and definition with intelligible matter, and 3. abstraction from all matter and definition with no matter), there are three types of speculative science. These three abstractions from matter, respectively specificative of the three types of speculative science, are the three degrees of formal abstraction.¹⁵ They are three *degrees* because each abstracts differently, the one more intensely than the other, from matter. They are degrees of *formal* abstraction because each determines a distinct *formality* in virtue of which being is precisely an object of scientific speculation. This then, in brief, is the doctrine of the three degrees of formal abstraction as presented by the traditional commentators.

Nor does this presentation differ essentially from that of St. Thomas himself. If we examine only some of his most significant texts in this regard we see that he teaches explicitly that the distinction between the three genera of speculative science (natural science, mathematics, and metaphysics) rests ulti-

¹⁵ *Ibid.*: Cajetan points out that for the physical, mathematical and metaphysical habits of science the *ratio formalis quae* is respectively *mobilitas*, *quantitas*, and *entitas*; the *obiectum materiale* in each case is *ens*; the *obiectum formale quod* is respectively *ens sub ratione mobilitatis*, *ens sub ratione quantitatis*, and *ens sub ratione entitatis*; and the *ratio formalis sub qua* in each case is respectively *modus abstrahendi et definiendi cum materia sensibili non tamen hoc, cum materia intelligibili tantum*, and *sine omni materia*. Cf. John of St. Thomas, *op. cit.*, 820b 22-40: "Est autem triplex materia a qua potest fieri abstractio, . . . scilicet *singularis*, quae reddit rem individuum et singularem; *sensibilis*, quae reddit illam accidentibus sensibilibus subiectam, saltem in communi; *intelligibilis*, quae est substantia, et subiacet quantitati etiam aliis accidentibus. Et ex abstractione seu carentia diversa huius materiae sumitur triplex genus scientiarum: Physica, quae abstrahit solum a materia singulari et tractat de sensibili; mathematica, quae etiam a materia sensibili et tractat de quantitati; metaphysica, quae etiam a intelligibili et tractat de substantia seu ente."

mately on the degree of abstraction from matter and mode of defining proper to each. And this, as we have indicated, is precisely the position held by the Commentators in their presentation of the doctrine of the three degrees of formal abstraction.

In the first article of the fifth question in his *Commentary on the De Trinitate of Boethius*,¹⁸ St. Thomas discusses the division of speculative science into three parts, namely, natural science, mathematics, and metaphysics. He begins by pointing out that a habit is distinguished by its object; however, not by any object whatsoever, i. e., the object materially taken, but only by an object precisely insofar as it is properly an object of this habit, i. e., the object formally taken. Next he points out that that kind of habit which is a speculative science must be distinguished by an object precisely insofar as it is an object of speculation, i. e., precisely insofar as it is speculatively intelligible. Finally, St. Thomas points out that the speculative intelligibility of an object is determined by its separation or remotion from matter and motion. Thereupon, he concludes, in

¹⁸ In *Boeth. de Trin.*, V, 1, c: "Speculativarum vero scientiarum materiam oportet esse res quae a nostro opere non fiunt. . . . Et secundum harum rerum distinctionem oportet scientias speculativas distingui. Sciendum tamen quod, quando habitus vel potentiae penes obiecta distinguuntur, non distinguuntur penes quaslibet differentias obiectorum, sed penes illas quae sunt per se obiectorum in quantum sunt obiecta. . . . Et ideo oportet scientias speculativas dividi per differentias speculabilium, in quantum speculabilia sunt. . . . Sic ergo speculabili, quod est obiectum scientiae speculativae, per se competit separatio a materia et motu vel applicatio ad ea. Et ideo secundum ordinem remotionis a materia et motu scientiae speculativae distinguuntur. Quaedam ergo speculabilium sunt, quae dependent a materia secundum esse, quia non nisi in materia esse possunt. Et haec distinguuntur, quia quaedam dependent a materia secundum esse et intellectum, sicut illa, in quorum diffinitione ponitur materia sensibilis; unde sine materia sensibili intelligi non possunt, ut in diffinitione hominis oportet accipere carnem et ossa. Et de his est physica sive scientia naturalis. Quaedam vero sunt, quae quamvis dependeant a materia secundum esse, non tamen secundum intellectum, quia in eorum diffinitionibus non ponitur materia sensibilis, sicut linea et numerus. Et de his est mathematica. Quaedam vero speculabilia sunt, quae non dependent a materia secundum esse, quia sine materia esse possunt, sive numquam sint in materia, sicut Deus et angelus, sive in quibusdam sint in materia et in quibusdam non, ut substantia, qualitas, ens, potentia, actus, unum et multa et huiusmodi. De quibus omnibus est theologia, id est scientia divina . . . quae alio nomine dicitur metaphysica."

terms not unlike those of the Commentators later, that the speculative sciences are distinguished into three on the basis of the degree of remotion, which is the same as abstraction, from matter and motion evidenced in the mode of defining proper to each. This is to teach the same doctrine later taught by the Commentators that there are three degrees of objective independence from matter which determine three distinct formalities respectively constituting objects specificative of the three types of speculative science, natural science, mathematics, and metaphysics.

Perhaps the most clear-cut and concentrated formulation by St. Thomas of the doctrine later taught by the Commentators is found at the very beginning of the *Commentary on the De Sensu et Sensato*.

... just as things are separable from matter so also are they related to the intellect. For each thing is intelligible to the degree to which it is separable from matter. Thus those things which are by nature separated from matter are in themselves intelligible in act; but those which are abstracted by us from material conditions become intelligible in act through the light of our agent intellect. And since the habits of any potency are distinguished in kind according to a difference in that which is formally the object of that potency, it is necessary that the habits of science, by which the intellect is perfected, be distinguished according to a difference in separation from matter. Therefore, the Philosopher in the sixth book of the *Metaphysics* distinguishes the genera of the sciences according to the diverse modes of their separation from matter. For those things which are separated from matter insofar as they exist and insofar as they are known pertain to *metaphysics*; those which are separated insofar as they are known but not insofar as they exist pertain to *mathematics*; and those which in their very meaning include sensible matter pertain to *natural science*.¹⁷

¹⁷ In *De Sensu et Sensato*, I, n. 1: "... sicut separabiles sunt res a materia, sic et quae circa intellectum sunt. Unumquodque enim intantum est intelligibile, inquantum est a materia separabile. Unde ea quae sunt secundum naturam a materia separata, sunt secundum seipsa intelligibilia actu: quae vero a nobis a materialibus conditionibus sunt abstracta, fiunt intelligibilia actu per lumen nostri intellectus agentis. Et quia habitus alicuius potentiae distinguuntur specie secundum differentiam eius quod est per se obiectum potentiae, necesse est quod habitus scientiarum, quibus intellectus perficitur, etiam distinguantur secundum differentiam separationis a materia; et ideo Philosophus in sexto *Metaphysicorum* distinguit genera scientiar-

In this passage from the *De Sensu et Sensato* St. Thomas teaches that the sciences are divided into three genera according to "diverse modes of separation from matter" (*secundum diversum modum separationis a materia*). In the previous passage from the *De Trinitate* he divides the sciences into three genera on the basis of "the different orders of remotion from matter and motion" (*secundum ordinem remotionis a materia et motu*). Cajetan later divides the sciences into three according to "diverse modes of formal abstraction" (*penes diversos modos abstractionis formalis*). Since formal abstraction is for Cajetan the abstraction of that which is formal in respect to the intellect from the matter which shrouds its intelligibility (*scilicet qua formale abstrahitur a materiali*) it seems clear that Cajetan is expressing the same doctrine as that expressed by St. Thomas, and, as a matter of fact, in language not so radically different from that of St. Thomas after all.

In the opening lesson of the sixth book of the *Commentary on the Metaphysics*¹⁸ St. Thomas treats at length the question

um secundum diversum modum separationis a materia. Nam ea, quae sunt separata a materia secundum esse et rationem, pertinent *ad metaphysicam*, quae autem sunt separata secundum rationem et non secundum esse, pertinent *ad mathematicam*; quae autem in sui ratione concernunt materiam sensibilem, pertinent *ad naturalem*."

¹⁸ *In VI Met.*, 1, nn. 1155-1165: . . . Cum enim definitio sit medium demonstrationis, et per consequens principium sciendi, oportet quod ad diversum modum definiendi, sequatur diversitas in scientiis speculativis. . . . Et ex hoc palam est quis est modus inquirendi quidditatem rerum naturalium, et definiendi in scientia naturali, quia scilicet cum materia sensibili. . . . In hoc ergo differt mathematica a physica, quia physica considerat ea quorum definitiones sunt cum materia sensibili. Et ideo considerat non separata, inquantum sunt non separata. Mathematica vero considerat ea, quorum definitiones sunt sine materia sensibili. Et ideo, etsi sunt non separata ea quae considerat, tamen considerat ea inquantum sunt separata . . . si est aliquid immobile secundum esse, et per consequens sempiternum et separabile a materia secundum esse, palam est, quod eius consideratio est theoricæ scientiæ. . . . Et tamen consideratio talis entis non est physica. Nam physica considerat de quibusdam entibus, scilicet de mobilibus. Et similiter consideratio huius entis non est mathematica; quia mathematica non considerat separabilia secundum esse, sed secundum rationem, ut dictum est. Sed oportet quod consideratio huius entis sit alterius scientiæ prioris ambabus prædictis, scilicet physica et mathematica. . . . Advertendum est autem, quod licet ad considerationem primæ philosophiæ pertineant ea sunt separata secundum esse et rationem a materia et motu, non tamen solum ea; sed etiam de sensibilibus, inquantum sunt entia. . . ."

of the diversification of the speculative sciences and once again concludes that this depends ultimately upon the diversification in the modes of separation or abstraction from matter proper to the various scientific subjects. He begins by arguing, as he does elsewhere, that sciences are differentiated in terms of formal differences in their principles. But the most significant principle of scientific argumentation is the middle term of demonstration. And the middle term of demonstration is the definition of the subject of scientific inquiry. Accordingly, any formal diversity in speculative sciences will follow from a formal diversity in the mode of defining found in each. From St. Thomas' discussion and in his examples it is clear that he considers differences in definitions to be formal in respect to the differentiation of the sciences when these differences reflect distinctly diverse relationships to matter. Because these diverse relationships to matter are generically three he concludes that these are three genera of speculative science, namely, natural science, which defines with sensible matter a subject which can exist only in matter; mathematics, which defines without sensible matter a subject which can exist only in matter; and metaphysics, which defines without any matter a subject which can, but need not, exist without any matter. In other words, these three sciences are, in the final analysis, distinct from one another precisely insofar as the object formal to each is related in a radically different way to matter, i. e., insofar as each is differently separated from or abstracted from matter. This is to teach, in equivalent terms, the same doctrine held by the Commentators when they teach that speculative science is divided into natural science, mathematics, and metaphysics on the basis of the three degrees of formal abstraction.

In an equally significant passage in his *Commentary on the Posterior Analytics* ¹⁹ St. Thomas argues in a similar fashion for

¹⁹ *In I Post. Anal.*, 41, nn. 361-371 (Marietti): . . . Scientia dicitur una, ex hoc quod est unius generis subiecti. . . . Est autem considerandum circa primum, quod cum rationem unitatis scientiae acceperit ex unitate generis subiecti, rationem diversitatis scientiarum non acceperit ex diversitati subiecti, sed ex diversitate principiorum. Dicit enim quod una scientia est altera ab alia, quarum principia sunt diversa; ita quod nec ambarum scientiarum principia procedent ex aliquibus

a principle of diversification for the sciences which reduces itself to that of the degrees of formal abstraction. Here St. Thomas notes, with Aristotle, that the diversification of the sciences depends on the diversification of the principles whereby they proceed. Thus one science is distinct from another whenever the principles from which it proceeds do not themselves depend on the same prior principles upon which depend the principles of the other and when the principles of the one do not depend upon the principles of the other. This is true whether we speak of the complex principles of science or the incomplex principles, though St. Thomas is here speaking of the incomplex principle of demonstration, namely, the middle term. Thus the diversification of the sciences rests on a diversity in middle terms. This is to say that the sciences are distinguished on the basis of a distinction in the degree of abstraction from matter proper to a given science. For the middle term in a demonstration is a probative principle precisely inasmuch as it is the definition of the subject of the demonstration expressing the cause of the property to be proven of the subject in the conclusion of the demonstration. Hence, middle terms will be distinguished as principles of science according to differences in them as far as mode of defining is concerned. And, since the mode of defining of an object depends upon its degree of abstraction from matter we must conclude that St. Thomas here once again teaches that the speculative

principiis prioribus, nec principia unius scientiae procedent ex principiis alterius scientiae. Ad huius ergo evidentiam sciendum est, quod materialis diversitas obiecti non diversificat habitum, sed solum formalis. Cum ergo scibile sit proprium obiectum scientiae, non diversificabuntur scientiae secundum diversitatem materialem scibilium, sed secundum diversitatem eorum formalem. . . . Patet ergo quod ad diversificandum scientias sufficit diversitas principiorum, quam comitatur diversitas generis scibilis. Ad hoc autem quod sit una scientia simpliciter utrumque requiritur et unitas subiecti et unitas principiorum. . . . Nec tamen intelligendum est quod sufficit ad unitatem scientiae unitas principiorum primorum simpliciter, sed unitas principiorum primorum in aliquo genere scibili. Distinguuntur autem genera scibilium secundum diversum modum cognoscendi. Sicut alio modo cognoscantur ea quae definiuntur cum materia, et ea quae definiuntur sine materia. . . . Et sic patet quod unitas generis scibilis in quantum est scibile, ex quo accipiebatur unitas scientiae, et unitas principiorum, secundum quae accipiebatur scientiae diversitas, sibi mutuo correspondent. . . ."

sciences are distinguished according to the degrees of abstraction from matter. That this is his point seems evident when he indicates, by way of illustration, that the distinction between natural science and mathematics rests ultimately on the diverse mode of defining proper to each, the one with sensible matter and the other without sensible matter.

St. Thomas, following Aristotle, begins his discussion in this lesson by distinguishing between the principle of the unity of science and the principle of the diversity of the sciences. Yet, ultimately, these two are the same, as St. Thomas indicates later on in the lesson. The unity of a science rests on the unity of its generic subject. But the subject of demonstration is properly subject only insofar as it is speculatively intelligible. And it is speculatively intelligible only insofar as it is free from matter, the principle of non-intelligibility. Thus, scientific subjects are one only insofar as they identically abstract from matter, this being revealed in their identical mode of defining. Accordingly, the unity of a science within itself, as well as the distinction of a science from other sciences, is ultimately dependent upon the same specifying principle, namely, the degree of abstraction from matter proper to the science. Thus we find St. Thomas teaching, both in reference to the unity and the diversity of the sciences, the doctrine presented later by the traditional Commentators as the doctrine of the three degrees of formal abstraction.

These several texts of St. Thomas, to which others could be added,²⁰ indicate the *general* agreement between the doctrine of St. Thomas on the specification of the sciences and that of the traditional Commentators expressed in terms of the three degrees of abstraction.²¹ There remains, however, the task of

²⁰ Notably, *Summa Theol.*, I, 85, 1, ad 2; *In I Phys.* 1, nn. 1 & 2; and *In Met.*, prooem.

²¹ I have indicated above that the Commentators discuss the division of the sciences in terms of five notions, namely, 1. the scientific habit itself, 2. its material object, 3. its formal object, 4. the *ratio formalis quae* of this formal object, and 5. the *ratio formalis sub qua* of the formal object. St. Thomas expresses himself in terms of these same notions. It might be worthwhile here in support of my thesis to note the exact terminology of St. Thomas and his traditional Commentators as

particularly reconciling St. Thomas' *abstractio totius* with the first degree of formal abstraction, his *abstractio formae* with the second degree of formal abstraction, and his *separatio* with the third degree of formal abstraction.

they express themselves in reference to these notions. J. Maritain has on several occasions ably defended the traditional interpretation of the Commentators and in doing so has happily introduced into modern Thomistic language his own illuminating terminology for these five notions. Because of the aptness of his expressions I shall include his with those of St. Thomas and the Commentators. The expressions shall be numbered for each man according to the numbering already indicated above in this note.

St. Thomas

1. *Habitus scientiae*. (used extensively throughout his works)
2. *Obiectum materiale*, id quod materialiter cognoscitur (*Summa Theol.*, II-II, 1, 1, c.)
3. *Subiectum scientiae*, vel genus scibile. (*In I Post. Anal.*, 41, *passim*).
4. *Ratio cognoscibilis*. (*Summa Theol.*, I, 1, 1, ad 2).
5. *Remotio a materia et motu seu modus separationis a materia, et diversus modus definiendi*. (*In Boeth. de Trin.*, V, 1, c.; *In De Sensu et Sensato*, 1, n. 1; *In VI Met.*, 1, n. 1156).

(These are not the only expressions used for these notions by St. Thomas, but they are typical.)

Cajetan (Cf. *In Summa Theol.*, I, 1, 3; *In Post. Anal.*, XXII; *In De Ente et Essentia*, prooem, q. 1).

1. *Habitus vel potentia*.
2. *Obiectum materiale seu res*.
3. *Obiectum vel subiectum formale quod*.
4. *Ratio formalis obiecti ut res seu ratio formalis quae*.
5. *Ratio formalis obiectum seu ratio formalis sub qua* (modus abstrahendi et definiendi respectu materiae).

John of St. Thomas (Cf. *Curs. Phil.*, I, *Ars. Log.* II, q. 1, a. 3; q. 27, a. 1).

1. *Ratio formalis sub qua parte habitus*.
2. *Obiectum materiale*.
3. *Obiectum quod seu ipsum totum quod constat ex obiecto materiali et formalitate*.
4. *Ratio formalis quae ex parte obiecti*.
5. *Ratio formalis sub qua ex parte obiecti* (diversa abstractio a materia et diversus modus definiendi).

Maritain (Cf. *La Philosophie de la Nature*, pp. 118-127, in English trans., pp. 125-135).

1. Scientific habitus, or subjective light in the effective order.
2. Material object.
3. Formal object, i. e., *sphere d'intelligibilite fondamentale*.
4. Inspect under which object presents itself to intellect, i. e., *appel d'intelligibilite*.
5. Mode of eidetic visualization and defining demanded by the object, or objective light.

I. *Abstractio Totius*

At first glance it would seem impossible to find Cajetan's notion of formal abstraction realized in St. Thomas' *abstractio totius*. The latter is literally a type of total abstraction, and Cajetan himself sharply distinguishes between total abstraction on the one hand and formal abstraction on the other. However, the confusion here is basically one of terminology. In a very general sense both Cajetan's *abstractio totalis* and St. Thomas' *abstractio totius* are abstractions-of-a-whole, but without being identified as abstractions of the *same* whole. In fact, both Cajetan's first degree of formal abstraction and St. Thomas' *abstractio totius* are both also generally abstractions-of-a-form, and, in fact, are identified as being abstractions of the same form.

Cajetan's *abstractio totalis* is the mental separation of a logical whole from its subjective parts, the *abstractum* to be considered precisely as being more general than that from which it has been abstracted (*est ut totum universale respectu ejus, a quo abstrahitur*). The whole-part composition on which this abstraction depends is the composition of logical whole with subjective parts.²²

St. Thomas' *abstractio totius* is the mental separation of the specific essence of the physical thing from the individuating characteristics which shroud its intelligibility, the *abstractum* to be considered precisely insofar as it involves an intelligible content determined by that point of intelligibility distinctive of the natural sciences (*in qua consideratur absolute natura aliqua secundum suam rationem essentialem*). The whole-part composition on which this abstraction depends is the composition of essential whole with non-essential parts.²³

²² Cf., *supra*, note 2.

²³ Cf. *supra*, note 3. There is at this point a difficulty in the text of St. Thomas which demands explanation. It seems clear in the controversial article that in explaining the notion of *abstractio totius* as distinct from *abstractio formae* and *separatio* St. Thomas intends to limit *abstractio totius* as explained to the natural sciences. In pointing out that by way of this abstraction some nature abstracted as a whole is considered absolutely in respect to its essential ratio ("*abstractio totius*,

Inasmuch as each is an abstraction of a whole from its parts each is legitimately called an abstraction-of-a-whole or a total abstraction, but insofar as the whole is a formally different one in each case the abstractions in question are diverse. This is true despite the fact that each might be exemplified in apparently the same example. The abstraction of *man* from *this man* and from *that man* is an example both of Cajetan's *abstractio totalis* and St. Thomas' *abstractio totius*. However, though materially identical the example is formally diverse in each case. It happens, on the physical level at least, that the matter which individuates an essence is materially identical with the matter which shrouds the intelligibility of that essence. This is not formal identity, for it is not precisely insofar as a thing is singular or individual that it is non-intelligible, or else an individual angel would thereby be non-intelligible because it is singular. The principle of individuation and the principle of non-intelligibility are formally diverse principles. Yet in the physical thing they do coincide, so that matter which individuates the physical essence is also that matter which makes it as

in qua consideratur absolute natura aliqua secundum suam rationem essentialem") he cuts *abstractio totius* off from mathematics, where the abstraction is not of a whole but a part, and from metaphysics, where the abstraction or separation reveals its object not simply from the point of view of essential perfection but formally from the point of view of the act of existing. Nevertheless it must be admitted that at the end of the controversial article St. Thomas explicitly says that *abstractio totius* not only belongs to natural science but is common to all the sciences ("*competit etiam physicae et est communis omnibus scientiis*"). Since it is clear that as explained throughout the article *abstractio totius* belongs properly to natural science and neither to mathematics nor metaphysics it seems that here at the end of the article St. Thomas, perhaps unhappily, switches the use of the term "*abstractio totius*" so that in this instance it does not mean precisely what it has meant throughout the article. "*Abstractio totius*" can be used in that general sense which signifies any abstraction-of-a-whole, be it essential whole or logical whole. St. Thomas' *abstractio totius*, explained as the abstraction of the essential whole and hence proper to natural science, and Cajetan's *abstractio totalis*, explained as the abstraction of the logical whole and hence common to all the sciences, are both instances of *abstractio totius* explained generally as the abstraction-of-a-whole. Used in this general sense, "*abstractio totius*" can be said of an abstraction belonging to natural science and yet common to all the sciences. St. Thomas seems to use it in this general sense at the end of the controversial article after having used it in the restricted sense which limits it to natural science throughout most of the article.

concretized in matter to be non-intelligibile. Thus it is that the mental separation of *man* from *this man* and *that man* is an example both of Cajetan's *abstractio totalis* and of St. Thomas' *abstractio totius*. Yet these abstractions remain formally distinct from one another, *abstractio totalis* being the abstraction of a logical whole from its subjective parts, and *abstractio totius* being the abstraction of the essential whole (of the physical thing) from its non-essential parts.²⁴

St. Thomas' *abstractio totius* is, therefore, the abstraction of a whole from its parts without being identical with total abstraction, which is also an abstraction of a whole from its parts. But this does not explain the reason why *abstractio totius* can be considered legitimately a type of formal abstraction.

Cajetan's formal abstraction, in contradistinction to his total abstraction, is the mental separation of an intelligible form, i. e., a knowledge object of thought from the matter which shrouds its intelligibility. And St. Thomas' *abstractio totius* is the mental separation of the essential whole from the individuating characteristics which are its non-essential parts. As such it is precisely an abstraction of an intelligible object from the matter which shrouds its intelligibility, and, hence, is a valid instance of Cajetan's formal abstraction.

St. Thomas is careful to point out on occasion that *abstractio totius* yields a whole and not a form. But he means this in a qualified sense. *Abstractio totius* frees for scientific investigation not just substantial form, but rather substantial form in its transcendental relationship to prime matter. It yields a form-matter composite rather than just form alone. Thus from this point of view it is an *abstractio totius* and not an *abstractio formae*. Yet the *abstractum* of this abstraction, the *totum* composed of substantial form and prime matter, can be considered itself as a form in reference to the matter which individuates it. In fact, St. Thomas frequently makes this point explicit, insisting that the essential whole is related as form to the individual, despite the fact that it is already itself composed

²⁴ For a more complete treatment of this important point, cf. Simmons, *op. cit.*

through a form-matter relationship.²⁵ Thus, there should be no difficulty in seeing why physical abstraction, on occasion labeled *abstractio totius*, because it is an abstraction of an essential whole from its non-essential parts, might also on another occasion be labeled a type of *abstractio formalis* because it is an abstraction of a form or intelligible object from matter.²⁶

Thus understood, Cajetan's first degree of formal abstraction, yielding an object of thought abstracted from individual sensible matter and distinctive of the natural sciences, is identical with St. Thomas' *abstractio totius*, yielding, as St. Thomas teaches, an intelligible object mentally freed from individual sensible matter and involving thereby that degree of intelligibility distinctive of the natural sciences.

II. *Abstractio Formae*

The purpose of this paper is to establish the legitimacy of speaking authentically as a Thomist of three types of formal abstraction proper respectively to natural science, mathematics, and metaphysics. I have already tried to make the point that it is certainly Thomistic to speak of St. Thomas' *abstractio totius* as a type of formal abstraction. I will attempt shortly to establish the same point in reference to St. Thomas' *separatio*. In the meantime it may seem pointless to spend time on mathematical abstraction, for this is a type of abstraction most obviously considered a formal abstraction by St. Thomas, who calls it significantly *abstractio formae*. Nevertheless it might be worthwhile to indicate briefly the reason why St. Thomas might be moved to speak of this as an *abstractio*

²⁵ *In II Phys.*, 5, n. 179: "Natura igitur speciei constituta ex forma et materia communi, se habet ut formalis respectu individui quod participat talem naturam." Cf. also, *Summa Theol.*, I, 85, 1, c. and *Cont. Gent.*, IV, 81.

²⁶ From the point of view of its intelligible content the object of natural science corresponds to what is called the "*forma totius*"; cf. *In VII Met.*, 9, n. 1467: "Forma partis dicitur secundum quod perficit materiam, et facit eam esse in actu: Forma autem totius, secundum quod totum compositum per eam in specie collocatur." The abstraction which yields the object for natural science can be spoken of either as an *abstractio formae* (i. e., *abstractio FORMAE totius*) or as an *abstractio totius* (i. e., *abstractio formae TOTIUS*).

formae even though he does not use this terminology in reference to the other abstractions-of-a-form.

The fact is that even though *abstractio totius* and *separatio* are legitimately thought of as formal abstractions, *abstractio formae* is the formal abstraction *par excellence*. In its original derivation the philosophically technical term, "form," in Thomistic terminology has reference to the specifying principle of motion or change, that is, to that active principle in the *quidditative* order which combines with matter to give us the mobile composite. Thus "form," in its strictest sense, connotes a *part* of a whole in the *quidditative* order. The formal *ratio* abstracted in physical abstraction is not a part in the *quidditative* order but rather a whole. And the formal *ratio* abstracted in metaphysical abstraction is not limited to the *quidditative* order but is principally of the existential order. Yet the formal *ratio* abstracted in mathematical abstraction, though it is not the substantial form which combines with prime matter to yield the mobile substance, is a *part* in that it is formally an accidental determination of a substance, and is a part in the *quidditative* order. Hence mathematical abstraction can be considered more strictly an abstraction of a form than can either physical or metaphysical abstraction.²⁷

Mathematical abstraction differs radically from the other two. Physical abstraction yields an object of thought (mobile being) inclusive of sensible matter—and mobile being exists extramentally in sensible matter. Metaphysical abstraction yields an object (being as such) in separation from all matter—and being *is* able to be realized in strictly immaterial substances. But mathematical abstraction yields an object (quantified being) in abstraction from sensible matter even though quantified being can extramentally exist only in sensible things.²⁸ The only existence that the mathematical entity has precisely

²⁷ Cf. *In Boeth. de Trin.*, V, 3, c. and ad 2.

²⁸ *In I Phys.*, 1, n. 2: "... curvum vero, licet esse non possit nisi in materia sensibili, tamen in eius definitione materia sensibilis non cadit; et talia sunt omnia mathematica, ut numeri, magnitudines et figurae"; also *In VI Met.*, 1, nn. 1161 & 1162 (cf. *supra*, note 18); *In Boeth. de Trin.*, V, 1, c. (cf. *supra*, note 16).

in its characteristic as a *mathematical* entity, i. e., in separation from sensible matter, is in the mind of the mathematician. Accordingly, mathematical judgments must be verified in the mind of the mathematician and not in the extramental real as is the situation in the other sciences.²⁹ Thus the total rationale of the mathematical object is that of a form. It is a real essence but not a real nature. It involves no inner principle of activity and has no potentiality to become something other than it is. It is wholly and totally its own formal actuality, an actuality explicable only in terms of formal causality.³⁰ Accordingly, the mathematical object though originally abstracted from concrete sensible things (and, hence, real) is in a special sense a form enjoying a purely formal existence. Thus mathematical abstraction is, in this sense, the *formal* abstraction *par excellence*.

III. *Separatio*

In my attempt to resolve the doctrine of the traditional Commentators into the authentic doctrine of St. Thomas, I have tried so far to show that the *abstractio totius* of the natural sciences is a type of formal abstraction not to be confused with the total abstraction common to all the sciences, and that the *abstractio formae* proper to mathematics is not necessarily the only type of formal abstraction, though it is, in a certain sense, the formal abstraction *par excellence*. There remains to be discussed the case of *separatio*.

To some Thomists *separatio* seems so radically different from both *abstractio totius* and *abstractio formae* as to preclude any possibility of considering it as one of three types of formal

²⁹ In *Boeth. de Trin.*, VI, 2, c.: "Sed quia secundum rationem diffinitivam non abstrahunt a qualibet materia, sed solum a sensibili et remotis sensibilibus condicionibus remanet aliquid imaginabile, ideo in talibus oportet quod iudicium sumatur secundum id quod imaginatio demonstrat. Huiusmodi autem sunt mathematica. Et ideo in mathematicis oportet cognitionem secundum iudicium terminari ad imaginationem, non ad sensum, quia iudicium mathematicum superat apprehensionem sensus."

³⁰ In *I Phys.*, 1, n. 5: "Nam mathematica non demonstrat nisi per causam formalem. . . ."

abstraction. Nonetheless, there is community enough, albeit tenuously analogical, to establish the classification. *Separatio*, like *abstractio totius* and *abstractio formae*, is a mental separation of an intelligible object from the matter which shrouds its intelligibility. And this object, precisely in this abstraction separated from all matter, is so constituted intelligibly as to specify the science of metaphysics, just as the respectively radically different *abstracta* of *abstractio totius* and *abstractio formae* in turn specify natural science and mathematics. Admittedly there are great differences between the first two types of formal abstraction and this third, yet each is analogously an abstraction and a formal abstraction.

Abstraction, as St. Thomas says, can take place in two ways. First of all, there is the mental separation of one feature of reality from another though these features of reality do not, because they cannot, exist apart from one another. This abstraction is legitimately effected in an act of simple apprehension so long as what is conceptualized separately is ontologically prior to that from which it has been mentally separated. Secondly, there is the mental separation of one thing from another when this one thing does, or at least can, exist apart from the other. This abstraction involves a negative judgment enunciating this existential independence of the *abstractum* from that from which it has been abstracted. Each is generally an abstraction or mental separation, but the former is less radically a separation, involving only objective and not existential separation, than the latter, involving even existential separation, and is, when the intention is to stress this difference, spoken of strictly as an abstraction while the latter is spoken of as a separation.³¹ The analogical notion of abstraction, generally taken, is that of a mental separation of one thing from another. This mental separation can be considered psychologically, when we speak of the act of mentally separating, and/or objectively, when we speak of the ontological, sometimes

³¹ In *Boeth. de Trin.*, V, 3, c. (cf. *supra*, note 3).

even existential, independence of one thing from another; the latter, of course, is the measure of the former.³²

Formal abstraction is the mental separation of an object, precisely as intelligible, from the matter which shrouds its intelligibility. Insofar as there are different degrees of matter from which objects can be freed by abstraction there are different degrees of formal abstraction yielding objects knowable on different levels of intelligibility. Since it is the intelligibility of an object which constitutes it precisely an object, and since the speculative sciences are specified precisely by objects insofar as they are objects, it follows that the different degrees of formal abstraction specify respectively the different branches of speculative science.

Separatio, according to St. Thomas, is the mental separation of being from all matter, a mental separation revealing being not only as ontologically prior to all matter—as is mobile being to individual matter and quantified being to sensible matter—but even as existentially independent of, i.e., able to exist without, matter.³³ This mental separation yields an object of thought, namely, being as such, intelligible to the highest degree and constitutive of a distinct science, metaphysics.³⁴ As a mental separation yielding the formal object of a distinct science, *separatio* is, like *abstractio totius* and *abstractio formae*, truly a type of formal abstraction. This is not to ignore at all the basic differences between *separatio* and the other two formal abstractions which, we should remember, are as between themselves radically disparate in nature. *Separatio* involves the second type of abstraction, generally taken, namely negative

³² The two ways of viewing the modes of abstraction as specificative of the sciences are in no way opposed to one another such that an interpretation from one point of view must needs be at odds with an interpretation from the other. Rather, since the real as known is the form of the intellect knowing, they are but complementary views of the same thing. It has been pointed out that the Commentators chose the objective point of view and St. Thomas, in the controversial article at least, the psychological (cf. Kane, *op. cit.*). This need not at all call into question the Thomistic authenticity of the interpretation of the Commentators as some have suggested (cf. Regis, *op. cit.*).

³³ Cf. especially, *In Boeth. de Trin.*, V, 3, c.

³⁴ Cf. especially, *In VI Met.*, 1, nn. 1162-1165.

judgment. The object whose intelligibility is revealed in *separatio* is knowable on an entirely unique level. This object is, moreover, only analogically realized in its instances, being paradoxically a whole which actually includes its inferiors and not, as with the univocal whole, only potentially including its inferiors.⁸⁵ Yet despite these differences *separatio* is still proportionally like *abstractio totius* and *abstractio formae*, since each *in its own way* yields an object distinctively free from the restrictions of matter and accordingly proportioned to a given level of scientific investigation. The difficulties involved in accepting the abstraction proper to metaphysics as one of the three degrees of formal abstraction disintegrate in the face of a proper understanding of the traditional doctrine on the three degrees. These are not, as they are sometimes popularly misconceived to be, three *univocal* steps in progressively stripping away outer layers of reality to reveal in turn different inner layers. Nothing could be further from the truth. Rather they are three radically different mental separations of distinctly different intelligible objects from distinctly different degrees of matter. The three degrees of abstraction are only analogically like one another, meaning of course, that they are basically diverse in kind and only proportionally the same. Yet there is this *proportional* sameness, and this is sufficient to establish the legitimacy of speaking of the three degrees of formal abstraction as determining respectively the three branches of speculative science.

SUMMARY

The purpose of this paper has been to show that neither the terminology nor the doctrine of the traditional Commentators is at odds with the teaching of St. Thomas as far as the question of the specification of the speculative sciences is concerned.⁸⁶

⁸⁵ Cf. especially, *De Ver.*, I, 1, c.

⁸⁶ The fact that the Commentators do not emphasize the difference in the strict sense between abstraction according to absolute consideration (*abstractio proprie*) and abstraction according to negative judgment (*separatio*) is no doubt a weakness in their presentation of the Thomistic doctrine of abstraction. For this refinement of terminology and doctrine in St. Thomas underscores a point of major importance

I have tried to show, as far as the terminological issue is concerned, that St. Thomas himself in some texts has chosen to speak of three different abstractions as proper respectively to natural science, mathematics, and metaphysics despite the fact that in other texts he speaks rather of two abstractions and a separation. Further I have tried to show, in respect to the doctrinal issue, that the general teaching of St. Thomas on the specification of the sciences corresponds to the interpretation of the Commentators even though St. Thomas does not speak, as do the Commentators, explicitly of three degrees of formal abstraction. Both St. Thomas and the Commentators teach that the specification of a science depends on its distinctive degree of abstraction or remotion from matter, and that there are three generically different branches of science corresponding to the three different ways in which an object can be free from the restrictions of matter. Lastly, I have tried to show in particular the doctrinal identity of St. Thomas' *abstractio totius*, *abstractio formae*, and *separatio* respectively with the first (physical), second (mathematical), and third (metaphysical) degrees of formal abstraction *rightly understood*. To illustrate this last point—and, in fact, as a summary of the whole paper—I would like to suggest the following schema as an illustration of the terminological and doctrinal community between St. Thomas and his traditional Commentators on the question of intellectual abstraction.

especially in respect to the nature of metaphysical science. However, this is by no means to say that this lack of emphasis on an important point suffices to vitiate the entire interpretation of St. Thomas by the traditional Commentators. It does, in a sense, leave the exposition of the Commentations incomplete. Nevertheless, their exposition remains generally faithful to the teaching of St. Thomas and in fact represents an admirably clear and pedagogically useful expression of the general doctrine of St. Thomas on the diversification of the science.

Abstraction in
general, i. e.,
mental separation
of one thing from
another

Abstraction in strict
sense (according to
simple apprehension-
abstractio propriae)

Mental separation of
any ~~whole~~ from its
parts (*abstractio*
~~*totius*~~ taken
generally)

Mental separation of
logical whole from
subjective parts
(*abstractio totalis*)

Common
to all the
sciences

Mental separation of
essential whole
from individual
matter
(*abstractio totius*)

Proper to
natural
science

Mental separation of
intelligible form or
ratio from matter
(*abstractio formalis*)

Mental separation of
form of quantity from
sensible matter
(*abstractio formae*)

Proper to
mathe-
matics

Separation in strict
sense (according to
negative judgment-
separatio propriae)

Mental separation of
ratio of being from
all matter
(*separatio*)

Proper to
meta-
physics

REVIEW ARTICLE

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Thomas and the Physics of 1958: A Confrontation. By HENRY MARGENAU. The Aquinas Lecture, 1958. Milwaukee: Marquette University Press, 1958. Pp. 61. \$2.50.

The nature of this confrontation, by Professor Margenau of Yale, a man of acknowledged competence both in the realm of the contemporary philosophy of science and in applied science, consists in a twofold view across the centuries: one a view of modern physics from the outlook of St. Thomas; the other a view of St. Thomas from the outlook of modern physics. Of the former, Professor Margenau says, "Thomas would, I think, have seen remarkable justification for his Aristotelianism in the methodology of present natural science." Of the latter, he says, "The comparison of present scientific methodology with those aspects of Thomas' system that are applicable to science is more favorable today than at any time in the last two centuries, if not indeed more favorable than ever, in the sense of showing parallels and conjectures fulfilled in our epoch." In other words, Professor Margenau finds the results of this confrontation most auspicious.

On what does this favorable and heartening confrontation revolve? It revolves principally on what Professor Margenau makes out of St. Thomas' doctrine of the *intellectus agens*. The quotations from St. Thomas' works which he employs are taken from *St. Thomas Aquinas: Philosophical Texts*, selected and translated by Thomas Gilby (Oxford Press, 1951). In the light of Fr. Gilby's own declared purpose in that work, namely, to produce "a compromise between a paraphrase and an exact and literal rendering," attention must be drawn to the fact that the passages cited by Professor Margenau do not always represent, by any means, the exact words of St. Thomas, but rather a literate paraphrase by Fr. Gilby, where, in the synthe-

sizing process, finer precisions of St. Thomas' text have been passed over. Thus, in the first passage cited by Professor Margenau (p. 7), where St. Thomas has the qualified statement, . . . *Intellectualis cognitio se extendit ultra sensibilia; intelligimus enim QUAEDAM quae sensu percipi non possunt*, Fr. Gilby's version simply states unqualifiedly, ". . . Intellectual knowledge transcends the things of sense." Further on, . . . *per participationem FORMARUM intelligibilium separatarum*, is rendered by, ". . . shares in intelligible and bodiless *ideas*." Where St. Thomas says, . . . *Non per modum defluxionis, ut Democritus posuit, sed PER QUAMDAM OPERATIONEM*, Fr. Gilby's version states, ". . . Not, however, in the manner of a discharge, as Democritus had said, but *in some other way*." St. Thomas then continues to show the extent of Democritus' doctrine of everything, including knowledge, being caused by the influx of the atoms, in the subsequent sentence, *Nam et Democritus omnem actionem fieri posuit per INFLUXIONEM atomorum*. In Fr. Gilby's version this appears in what seems like a new and not obviously related thought, "Democritus, incidentally, had also held that all action is the upshot of atomic *changes*." It would seem, then, that despite the eminent literacy of Fr. Gilby's version, it would be a little too uncritical simply to accept it without question as the exact rendering of the text of St. Thomas, a claim which Fr. Gilby himself does not make.

The passage in St. Thomas to which the above excerpts refer, namely, *Summa Theol.*, I, q. 84, a. 6.—"Whether intellectual knowledge is received from sensible things"—may be said to provide the "frame of reference" for Professor Margenau's confrontation. In it St. Thomas traces the two extreme attitudes with regard to knowledge, as typified in radical sensism as attributed to Democritus, and an equally radical idealism as attributed to Plato. Between them, combining both sense and intellect, St. Thomas locates the theory of knowledge of Aristotle. Professor Margenau will use this threefold division in apportioning off the various modern outlooks, and furthermore will liken them respectively to the *intellectus possibilis*, the *intellectus agens*, and the combination of both.

Speaking of the first of the three theories—that, namely, which sees thought simply as the rigid product of sensible realities—Professor Margenau places under it both the unflinching sensism of the Humeans and even the detached computer-collated picture of the logicians, modern version. His critique of this outlook is that it allows for no “novelty through reason.” “It is my own belief,” states Professor Margenau, “that novelty can enter through reason as well as through sense . . .” (p. 14).

Fifty years ago it was felt to be merely a matter of time until all the sciences would approach the mathematical predictability being attained by the physical sciences, a predictability such that “there was nothing empirical which in principle could not be caught in the theoretical net, nothing theoretical that did not have an empirical counterpart” (p. 16). “Quantum mechanics,” says Professor Margenau, “has changed all that.” Now the same probabilities, the same statistical evaluations once thought the property of the less exact sciences such as sociology or psychology, have become true of the physical sciences: “No finite set of observations enables theory to predict the place where an electron will strike a screen; quantum mechanics restricts itself to the calculation of averages, of possibilities indicating how many times in a great number of passages the electron will hit a given spot. More than that, it gives convincing reasons why this resignation is necessary and why the detailed determinism of classical physics must fail” (pp. 17-18).

From this, in place of the two basically identical pictures of a single reality—the purely sensory one, and the equally impersonal mathematically-computed one—there now emerges two basically different pictures: one of the sensory world; the other of a world of probabilities which are not directly sensed, which cannot be computed in terms of the individual concrete entities of the sensory world. This new break, between the “historical” reality of individual events, personal decisions, and the “physical” reality of physical bodies and systems in space-time, is especially evident in the atomic realm, “in the domain of the very small, where physics has made its most recent advances” (p. 20).

At this point, at the point where the once purely sensory scientific outlook has now been joined by an outlook transcending sense, Professor Margenau returns to St. Thomas and the final words of the passage first cited by him: "The mere impression of sensible objects is not sufficient to cause intellectual activity." Professor Margenau now continues this passage with the words of Fr. Gilby, "A nobler and higher force is required . . .," leading to the positing of the *intellectus agens* as a necessary faculty "which by the process of abstraction renders actually intelligible images taken from the sense" (pp. 20-21). It is upon this *intellectus agens*, called by Fr. Gilby in this passage, first, *factive intellect*, then, *active intellect*, that Professor Margenau now concentrates.

He finds the phrase, *factive intellect*, as a rendering of the *νοῦς ποιητικός* of Aristotle, particularly felicitous, because "this happy wording calls attention to an element of epistemology, an *autonomous* function of reason, which has long been buried under layers of positivistic and language-analytic considerations" (pp. 21-22. Italics mine). Out of this one word "factive," in the rendering of *intellectus agens*, Professor Margenau will draw well-nigh all the flattering things he has to say about St. Thomas' outlook as referred to the contemporary scene. Ironically enough, his reasons are perhaps the very reasons why St. Thomas, while fully aware of this etymology of the word, and while consistently using the word *facere* in connection with *intellectus agens*, nevertheless did *not* choose to call it *intellectus factivus* or something similar, but rather *intellectus agens*. For Professor Margenau, the *factive intellect* now becomes that faculty which, side by side with the *passive* (possible?) *intellect* in the realm of sense, operates in the newly-opened dimension of science which is beyond sense. The "novelty of reason" has been introduced, and its "maker," suppressed until the breakdown of positivistic science under the phenomena of quantum mechanics, is none other than the "factive intellect" of St. Thomas. Alas for the credit bestowed upon St. Thomas, his *intellectus agens* does not *make* in the sense of producing a product, even a mental construct, but only

makes clear in the qualitative sense, transforming what already is. Thus the process whereby the agent intellect renders the sensible species actually intelligible is similar, not to the process whereby a sculptor might *make* a statue, but rather to the process whereby a statue *already* made, but unseen in the darkness, is *made visible* by the rays of a light.

St. Thomas' exposition of the nature of the *intellectus agens* is clear and consistent, and there is no possibility of misunderstanding it. Aristotle introduces the *intellectus agens* in *De Anima* III, c. 5, 430a 10. St. Thomas says that Aristotle shows its existence there by an argument, and by an example: "He lays down therefore . . . the following argument. In every nature which is sometimes in potency and sometimes in act, it is necessary to lay down something which is as the matter in each genus, which is, namely, in potency to all the things of that genus. Likewise it is necessary to posit another, which is an agent cause, and *factive*, which is with respect to *making* all things, as art is to matter. But the soul according to the intellective part is sometimes in potency and sometimes in act. It is necessary therefore that there be in the intellective soul these differences: that there be, namely, one intellect in which all intelligible things are able to be produced—and this is the possible intellect, concerning which it was spoken above [i.e., in c. 4]; and another intellect for the purpose of making all intelligible things in act—which is called the *intellectus agens*, and is as a certain habit." (*In De Anima*, III, l. 10, no. 728.)

Having clarified the meaning of the word "habit" in this context, as meaning a form or nature, in contrast to the status of the possible intellect as in potency, St. Thomas goes on to expound Aristotle's comparison of the *intellectus agens* to light in the order of example: "Whence he states that it is a habit after the manner of light, which in a certain way makes colors which are in potency to be colors in act. . . . Now the *intellectus agens* causes the intelligible things to be in act, which previously were in potency, by the fact of abstracting them from matter, for thus they stand intelligible in act, as was said [c. 4, 429b 20, 'To sum up . . .']. " (*Ibid.*, no. 729-30.)

Finally St. Thomas adds that which prompted Aristotle to posit the agent intellect: "Now Aristotle was led to posit the *intellectus agens* in order to exclude the opinion of Plato, who laid down the natures of sensible things to be separated from matter, and intelligible in act—whence it was not necessary to posit an agent intellect. But since Aristotle lays down that the natures of sensible things are in matter, and not intelligible in act, it was necessary for him to posit some intellect which should abstract them from matter, and thus make them intelligible in act." (*Ibid.*, no. 731.) This same description of the function of the *intellectus agens* is found in *Summa Theol.*, I, q. 84, a. 6., from Fr. Gilby's version of which, Professor Margenau quotes. It is likewise found in *II Cont. Gent.*, c. 77; *Q. D.*, *De Anima*, a. 4; *De Spir. Creaturis*, a. 10.

Having adopted the *factive intellect* as a faculty capable of introducing an element of *reason* in the form of mental "constructs," matching the *passive intellect* which collates the data of sense in the form of "percepts," Professor Margenau illustrates the domain of these two intellects in terms of Eddington's two "desks" at which he sat and worked: One of them was the macroscopic desk with its geometric shape, its smooth surface, brown color, its sensed rigidity and its inert mass. The other was the 'desk of the physicist,' consisting of "interlocking space lattices of different molecules, each molecule containing its atom and each atom its nucleons and electrons circulating with tremendous speeds" (p. 24). Quantum mechanics has added further that the fast-moving electrons may not even be pictured as having definite positions at all times. Professor Margenau likens this to the discontinuous motion of an angel, save for the fact that whereas "St. Thomas leaves us free to visualize, to intuit in terms of a discontinuous model of motion, the passage of an angel, the electron should not be visualized at all" (p. 25). The two "desks" then, are different, and not merely two views of the same—and St. Thomas has felicitously provided the framework which has room for this new development: "The second desk is the product, very largely, of Aquinas' *factive intellect*; the first involves mere abstraction,

collation of sensory material, performed by what Thomas calls the passive intellect. The two desks are not identical; they are related by a relatively new epistemological factor which I have termed a rule of correspondence in previous writings . . . a unique relation between ostensibly different kinds of experiences " (pp. 27, 29) .

What one must notice here is that in this conception the work of one intellect is not simply the continuance and development of the other. Rather, where one is a purely *sensuous* picture, as organized as one may wish, but still sensuous, the other is a picture into which new, non-sensuous elements, elements of *reason*, not derived from sense, have been introduced. Passive intellect presides over the purely sensuous or perceptory, organization; factive intellect over the rational organization—on an entirely different, non-intersecting although not irreconcilable, plane. There is, of course, a middle-ground, boundary-lines are crossed—"no actual determinate experience is, for instance, wholly perceptory or wholly rational" (p. 30) .

When, thanks to the "rules of correspondence," one links the rational "constructs" to empirical verification in the domain of sensory "percepts," one has what may be called "verifacts," which compose "within our experience the domain of physical reality" (p. 35). Beyond this, is the "ontological" realm, where constructs are validated, not by sense experience, but by "metaphysical requirements, which do not have their origin in the sensory part of our experience, but spring from what Thomas would call the nature of man's rational soul" (p. 33). Professor Margenau states that "most scientists do believe that experience points to an ontological reality beyond the physical which (latter) consists only of verifacts" (p. 35). This involves a "leap," and the leaving behind of empirical verification (p. 36 and Note 7). In the meantime, returning to the realm of "constructs" related now to empirical "verifacts," Professor Margenau quotes with approval a very elliptical and fluid rendering by Fr. Gilby of *Summa Theol.*, I, q. 85, a. 2, on the object of the intellect being not mental states but things, but quotes with reserve what is actually a very diluted passage

from *Q. D.*, *De Ver.*, q. 11, a. 1, on self-evident principles adding: "The conclusion seems inescapable that no proposition, formal or otherwise, carries within itself complete assurance of truth" (p. 40). As a final compliment to St. Thomas, Professor Margenau terminates his perspective from St. Thomas to modern times with a formula showing that "creation of matter out of nothing contradicts no physical conservation law" (pp. 41-43).

What must one say of this flattering treatment of St. Thomas at the hands of a competent and authoritative modern scientist? It is with regret that one must state that the "factive" and "passive" intellects so graciously attributed to St. Thomas have actually no resemblance to the *intellectus agens* and *possibilis* in St. Thomas' work. The function of both these faculties is clearly outlined in the places indicated above: that of the *intellectus agens* to render intelligible the sensible phantasms or images received from matter; that of the *intellectus possibilis* to receive the imprint of these images once rendered intelligible. The two constitute not *two* knowing processes, but a *single one* in the process of going from potency to act: the *intellectus agens* does not *know*, but solely "*lights up*" the phantasm, which now, having passed from singular materiality to universal intelligibility, is imprinted upon the *intellectus possibilis*, constituting actual intellection, or intellectual knowledge. ". . . The *intellectus agens* does not make the species intelligible in act in order that it may know through them . . . since it is not in potency, but in order that through them the *intellectus possibilis* may know." (*II Cont. Gent.*, c. 76.) ". . . Of the two intellects, namely, the possible and the agent, there are two actions. For the act of the possible intellect is to receive the intelligibles; while the act of the agent intellect is to abstract the intelligibles. Nevertheless it does not follow that there is a twofold intellecting in man—since for the one knowing it is necessary that both of these actions concur." (*Q. D.*, *De Anima.*, a. 4, ad 8.) ". . . The same intelligible species is compared to the agent and the possible intellect—but to the possible

intellect as to that which *receives*; while to the agent intellect as that which *makes* such species by abstraction." (*Ibid.*, ad 9.)

It is interesting to note the parallel between the merely stimulating role of sense knowledge with respect to intellectual knowledge in the Platonic scheme, and the merely suggestive role of the "percept" with respect to the factive intellect's "construct" in Professor Margenau's outlook. Thus, he states, "There is a sense in which the constructs are 'suggested' by the percepts, but very little is gained by the use of that indefinite phrase which merely adverts to the circumstance that when the perceptory situation is present we are urged by psychological predisposition or methodological habit to accept the presence of the other" (p. 28). In the same vein St. Thomas writes, in the article first cited by Professor Margenau: "Thus, therefore, according to the opinion of Plato, neither does intellectual knowledge proceed from sensible, nor even sensible knowledge wholly from sensible things; but rather sensible things stimulate (*excitant*) the sensible soul to sensation, and likewise the senses stimulate the intellective soul to understanding" (*Summa Theol.*, I, q. 84, a. 6).

How foreign a factive intellect conceived as transcending sense data is from the *intellectus agens* of St. Thomas, may be seen from the fact that it is precisely the need for abstracting *all* knowledge from the senses that is the *raison d'être* of the *intellectus agens*: a theory of knowledge transcending sense knowledge, where the knowable would be already in an intelligible state, as with the Platonic species, would not require an agent intellect, as was cited above from St. Thomas. This need for abstracting all knowledge from merely *potentially* intelligible sense data is given consistently as the reason for there being an *intellectus agens*. Thus, to quote only one other passage, one has: "... Since Aristotle did not posit the forms of natural things as subsisting without matter—now the forms existing in matter are not intelligible in act—it followed that the natures or forms of sensible things which we understood were not intelligible in act. But nothing is reduced from potency to act except through some being in act, as the sense is rendered

in act by the sensible in act. It is necessary, therefore, to lay down some power on the part of the intellect which makes things to be intelligible in act by abstraction of the species from material conditions—and this is the necessity for positing the *intellectus agens*” (*Summa Theol.*, I, q. 79, a. 3).

To the extent that the factive intellect which Professor Margenau adduces would be “autonomous” of sense data—“It is my own belief,” he states, “that novelty can enter through reason as well as through sense”—to that very extent such an intellect could indeed be “factive” or “making” according to the dictates of human creativity, producing an order in irrational events where none existed before. On the other hand, to the extent that the intellect, face to face with reality, was in the position not of a “maker,” but of an observer who views the nature which he does *not* make, to that extent one would avoid the possible ambiguity arising out of calling an intellect “factive,” which, although it makes things intelligible, does *not* make the order in those things. Thus one understands why St. Thomas, while using the word *facere* of this intellect, nevertheless does not call it *factivus*. In effect, he consistently emphasizes that the intellect face to face with reality does *not* make: “. . . There is a certain order which reason does *not* make, but solely considers, as is the order of natural things. . . . To natural philosophy it pertains to consider the order of things which the human reason considers but does *not* make—including under natural philosophy also metaphysics” (*In Eth. Arist.*, I, 1. 1, no. 1-2). “. . . Human reason of the things which are according to nature is knowing *only*; but of those which are according to art, it is both knowing and making . . .” (*In Pol. Arist.*, *Prooem.*, no. 2). “. . . [Certain] sciences do not have a product, but knowledge only, as is the case with divine science and natural science, whence they cannot have the name of ‘art,’ since art is called ‘factive reason’” (*In Boet. De Trin.*, l. 2, q. 1, a. 1, ad 3). Hence it is clear that in natural science or physics, which is the science of which Professor Margenau speaks, if his “factive intellect” is “making,” it in no way resembles the function of the intellect as understood by St. Thomas.

Finally, mention must be made of the use of the word "passive intellect" by Professor Margenau as designating the counterpart of "factive intellect." Since the *intellectus agens* becomes the "factive intellect," it is assumed that by "passive intellect" is meant the *intellectus possibilis*. However, since St. Thomas notes an *intellectus passivus* distinct from the *intellectus possibilis*, and since it is precisely the confounding of these two which constitutes the Averroistic position, the position of St. Thomas should not be unknown. It is contained in the very same *lectio* in which St. Thomas discusses the initial positing of the *intellectus agens* by Aristotle, namely, *In De Anima*, III, l. 10. The need for distinguishing between "possible" and "passive" intellects arises from Aristotle's statement: "When mind is set free from its present conditions it appears as just what it is and nothing more: this alone is immortal and eternal—we do not, however, remember its former activity because, while mind in this sense is impassible, mind as passive is destructible—and without it nothing thinks" (430a 20, Oxford transl.). If the agent intellect is taken as "separated" not only from a sense organ but from the body itself, and the possible intellect is identified with the "passive" mind which corrupts, then one has the Averroist position of a single separated active intellect for all men, and individual corruptible possible intellects—and thereby corruptible souls—for individual men.

St. Thomas, in speaking of Aristotle's statement in this place that "mind in this sense (i. e., the *intellectus agens*) is separable, impassible, unmixed . . . in its essential nature activity," has these four characteristics for a single reason: the agent is more noble than the patient, and therefore the *intellectus agens* more noble than the *intellectus possibilis*. But the *intellectus possibilis* has already been shown to be the first three, i. e., separated, impassible and unmixed [in c. 4, 429a 15 sq.—'since everything is a possible object of thought, mind . . . to know, must be pure from all admixture . . .']; hence this is all the more true of the *intellectus agens* which is in act with regard to the *intellectus possibilis* (*In De Anima*, III, l. 10, no. 732-3). This

“separation” is separation from a bodily organ, since in order to know material things universally the intellect itself cannot be material. Both operations, that of abstracting the intelligible species from sense knowledge, and that of receiving them, terminate in a *single* knowing of the natures of material things: they are both, as Aristotle says, “within the soul.”

This whole intellectual section of man is separable, i. e., can survive the body, for, as Aristotle states, “while the faculty of sensation is dependent upon the body, mind is separable from it” (429b). St. Thomas then expounds the words, “. . . this alone is immortal and eternal . . .,” as follows: “And since in the beginning of this book he [Aristotle] stated that if there be any operation of the soul proper to it, the soul may be separated [i. e., Book I, 403a, 10: ‘If there is any way of acting or being acted upon proper to soul, soul will be capable of separate existence’], he concludes that this sole part of the soul, namely, the intellective, is incorruptible and perpetual. And this is what he set down above in Book II, namely, that this genus of soul is separated from others as the perpetual from the corruptible [413b 25: ‘. . . Mind or the power to think . . . seems to be a widely different kind of soul, differing as what is eternal from what is perishable . . .’]. But it is called ‘perpetual,’ not because it always was, but because it will always be. Whence the Philosopher states in *Metaphysics* XII that form is never anterior to matter, but the soul remains afterwards—not all ‘soul, but the intellect [1070a 25: . . . The soul may be of this sort—not all soul but the reason’].” (*In De Anima, loc. cit.*, no. 743.)

If the intellective part of the soul, the agent and possible intellect, is “separable,” i. e., immortal, while the body perishes, what then of that mind which “as passive, is destructible,” i. e., the “passive” intellect? Actually, the “passive intellect” in this context represents the sense faculties, subject to the sense passions, as the impassible agent and possible intellect are not, and whose use is suspended with the destruction of the sense organs, and “without which,” since all natural knowledge comes through the senses, “nothing thinks” in the natural way.

Of this "intellect," which is really sense, St. Thomas says: "And therefore he states here that we do not remember, namely, after death, those things which we knew in life, since 'mind in this sense is impassible,' i. e., that part of the intellectual soul is impassible [namely, the agent and possible intellect], whence it is not the subject of the passions of the soul, such as are love and hate, reminiscence and such, which arise from some bodily passion. But the passive intellect is corruptible, i. e., the part of the soul which is not without the aforesaid passions, is corruptible; for they belong to the sensitive part. Nevertheless this part of the soul is called 'intellect,' as it is also called 'rational, in so far as it partakes in some way of reason, by obeying reason and following its motion, as is said in *Ethics* I [1102b 30: '... The vegetative element in no way shares in a rational principle, but the appetitive, and in general the desiring element in a sense shares in it']. But without this part of the corporeal soul, the intellect does not know anything. For it does not know anything without a phantasm, as will be said below [431a 15: '... The soul never thinks without an image']. And therefore, when the body is destroyed, there does not remain in the separated soul knowledge of things according to the mode in which it now understands. But as to how it then understands it does not belong to the present intent to discuss." (*Ibid.*, no. 745.)

From his comparison of it with the "factive intellect" (*intellectus agens*) it would seem that Professor Margenau must have conferred the appellation of "passive intellect," not upon the "passive intellect" of St. Thomas which Fr. Gilby does not appear to treat (except to mention in a footnote, p. 237, that the *intellectus possibilis* should *not* be translated as the 'passive intellect'), but upon the "possible intellect," which in one place Fr. Gilby calls the "receptive intellect," possibly lending to Professor Margenau's tendency to call it the "passive intellect." The interesting part, however, is that while Professor Margenau's "passive intellect" which mechanically collates sense data without the intrusion of the novelty of reason, in no way resembles the *intellectus possibilis* which perceives, not

sense-data, but the universal intelligible order implicit in that data, it does very much resemble the "passive intellect" of St. Thomas, which is not an intellect at all, but a sense power under the aspect of a certain similarity to reason—for example, as in the case of the *cogitative power* or "*particular reason*," which collates sensible singulars into a single experiential knowledge somewhat after the manner of the universal reason collating universals. St. Thomas says, in effect: "... Experience is from the collation of several singulars received into the memory. Now such a collation is proper to men, and belongs to the cogitative power, which is called the 'particular reason,' which is collative of individual intentions as is universal reason of universal intentions" (*In Meta. Arist.*, I, l. 1, no. 15). "And that singulars are of the nature of principles is plain, since from singulars the universal is derived. For from the fact that this herb conferred health upon this man one derives that this species of herb is able to heal. And since singulars are properly known by sense, it is necessary that man should have of these singulars . . . not only external sense, but also internal, which he has called above 'prudence,' namely, the cogitative or estimative power, which is called 'particular reason.' Whence this sense is called 'intellect,' which is concerned with sensible or singular things. And this the Philosopher calls in *De Anima* III the *passive intellect*, which is corruptible" (*In Eth. Arist.*, VI, l. 9, no. 1249. For a distinction between *intellectus passivus* and *possibilis*, Cf. *Summa Theol.*, I, q. 79 a. 2, ad 2).

The "passive intellect" of Professor Margenau, with its function of collating data in an unthinking positivistic way, with a logic which shuts out inferences of reason, seems then, whether by coincidence or not, remarkably like the "passive intellect" of St. Thomas. But what can be said of his "factive intellect"? It does not have any counterpart in that intellectual part of the soul, composed of the agent and possible intellect, with regard to the observation of nature from which natural science and metaphysics are derived, since the former in its rational function "makes," while the latter does not. Nor, fundamentally, can Professor Margenau's "factive intellect,"

to the extent that it implies a contribution of reason independent of the senses, be assimilated to intellect as conceived by St. Thomas at all, since it is a rigid principle for St. Thomas that *all* natural knowledge originates through the senses: "... It is impossible that our intellect according to the state of the present life in which it is conjoined to a passible body should understand anything in act except by turning to phantasms" (*Summa Theol.*, I, q. 84, a. 7). So clear does St. Thomas make the point of the sensible origin of all natural knowledge in this life, that he is able to say, speaking of the very Questions on the knowledge of the intellect from which Professor Margenau borrows *via* Father Gilby: "Now the first thing which is understood by us according to the state of the present life, is the nature of a material thing, as has been stated a number of times above" (*Ibid.*, q. 88, a. 3).

Since St. Thomas is at pains to underline the point that in this life all knowledge is initially derived from the senses, necessarily depends upon sense phantasms or images, and terminates primarily at the natures or quiddities of material things, it is perhaps well to list something of the dense sequence of these statements in a relatively short space: "The body seems necessary to the intellective soul most of all for its proper operation which is to *understand*, since according to its *existence* it does not depend upon the body" (*Ibid.*, q. 84, a. 4). "... Each one is able to experience within himself that when someone is trying to understand something, he forms certain phantasms in the manner of examples, in which he considers, so to speak, that which he is endeavoring to understand. Whence it is also that when we wish to have someone understand something, we propose examples to him from which he may be able to form phantasms in order to understand. . . . Now of the human intellect, which is conjoined to the body, the proper object is the quiddity or nature existing in a material thing; and through such natures of visible things it rises also to a certain knowledge of invisible things. . . . But we apprehend the particular thing [in which the nature of any material thing exists] by sense and imagination—and therefore it is necessary

in order that the intellect actually understand its proper object, that it should consider the universal nature existing in the particular thing" (*Ibid.*, q. 84, a. 7). "... The proper object proportioned to our intellect is the nature of a sensible thing. Now a perfect judgment cannot be given of any thing unless all the things which pertain to that thing be known. This is especially true should one be in ignorance of that which is the term and end of the judgment. Now the Philosopher says, 'Just as the end of factive science is the product, so of natural science the end is that which is seen properly according to sense knowledge [*De Caelo III*, 306a 15: '... That issue, which in the case of productive knowledge is the product, in the knowledge of nature is the unimpeachable evidence of the senses as to each fact']. ... The natural scientist does not seek to know the nature of a stone and a horse except to know the notions of those things which are seen by the senses. It is plain that ... there cannot be a perfect judgment in natural science of natural things if one does not know the sensible things" (*Ibid.*, q. 84, a. 8). "... Its (the human intellect's) proper function is to know a form existing indeed individually in corporeal matter, but nevertheless not as it is in *this* matter. But to know that which is in individual matter, not as it is in *this* matter, is to abstract the form from individual matter, which form the phantasms picture. And therefore it is necessary to state that our intellect knows material things by abstracting from phantasms; and through material things thus considered we arrive at some knowledge of immaterial things, just as conversely the angels know material things through immaterial things" (*Ibid.*, q. 85, a. 1). "... The object of our intellect according to the state of the present life is the nature of a material thing, as was said above ... " (*Ibid.*, q. 87, a. 2, ad 2). "... According to the judgment of Aristotle, of which we have more experience within ourselves [than, namely, that of Plato whereby one knows through immaterial subsisting ideas], our intellect according to the state of the present life has its natural direction to the natures of material things—whence it understands nothing except by turning to phantasms, as is evident from what has

been said. . . . It was shown above that the *intellectus agens* is not a separated substance, but a certain power of the soul, extending to the same things by act to which the *intellectus possibilis* extends receptively: for, as it is stated [in *De Anima* III, c. 5, 430a 10], the possible intellect is that which is able to become all things, while the agent intellect is that which is able to make all things. Both intellects, therefore, extend according to the state of the present life solely to material things, which the agent intellect causes to be intelligible in act, and which are received into the possible intellect. . . . Our possible intellect is so disposed according to the state of the present life as to be informed by the likenesses of material things abstracted from phantasms" (*Ibid.*, q. 88, a. 1, and ad 2).

In the following Question 89, on the knowledge of the separated soul, St. Thomas states unequivocally: ". . . The manner of understanding by conversion to phantasms is natural to the soul, as is to be united to a body; but to be separated from the body is out of keeping with its nature; and likewise to know without conversion to phantasms is out of keeping with its nature" (*Ibid.*, q. 89, a. 1). At this time the natural knowledge of the soul, says St. Thomas, "is not through innate species, nor through species then abstracted, nor solely through species preserved [i. e., as habitual in the intellect, without accompanying phantasms preserved in sense memory] . . . , but through species participated through the influx of the divine light, of which the soul is made partaker with the other separated substances, although in a lower way" (*Ibid.*, ad 3). "It was stated that as long as the soul is united to the body, it understands by turning itself to phantasms" (*Ibid.*, a. 2). "Now the acts of the intellect by which in the present life science is acquired are through the turning of the intellect to phantasms, which are in the . . . sensitive powers" (*Ibid.*, a. 5).

Professor Margenau likewise quotes from Fr. Gilby a passage from Question 85, a. 2, whose initial purport is not to give a kind of primacy to the intelligible species themselves, as Professor Margenau would seem to favor, but whose conclusion,

which is not included, goes as follows: "... The likeness of the thing understood, which is the intelligible species, is the form according to which the intellect understands. But since the intellect reflects upon itself, according to the same reflexion it understands both its understanding and the species by which it understands. And thus the understood *species* is secondarily that which is understood, but that which is understood primarily is the *thing*, of which the intelligible species is the likeness" (*Summa Theol.*, I, q. 85, a. 2). This is repeated: "... The human intellect . . . is neither its understanding, nor is its essence the primary object of its understanding, but rather something extrinsic, namely, the *nature of a material thing*. And therefore that which is first known by the human intellect is such an object; secondly is known the act itself by which the object is known; and through the act is known the *intellect* itself, whose perfection the act of understanding is. . . . The intellect is able to know its act, but not first, since the first object of our intellect according to the present state is not any being and truth whatsoever, but being and the true considered in material things, as was said [q. 84, a. 7], from which it arrives at the knowledge of other things" (*Ibid.*, q. 87, a. 3, and ad 1).

From all of the above it is clear that there is nowhere to be found in St. Thomas a counterpart of the "factive intellect" which Professor Margenau adduces, in the sense of an intellect which can somehow produce thought independently of sense-data. Nor is it a question of whether such thought would be valid and objective: for St. Thomas it is downright impossible. There is no such thing, therefore in St. Thomas, as an "autonomous function of reason" (p. 22), capable of "injecting into the stream of knowledge . . . elements of its own" (*Ibid.*). Nor can there be "abstract principles—called metaphysical requirements—which do not have their origin in the sensory part of our experience but spring from what Thomas would call the nature of man's rational soul" (p. 33). There can be no "leap" into an "ontological reality" (p. 36) where what is drawn from the intelligible species, the "mental states" (p. 37), has any more content than that which may be strictly

derived or inferred from sense data. While it is true that "the intellect knows many things in the thing apprehended through sense, which the sense is not able to perceive" (*Summa Theol.*, I, q. 88, a. 4, ad 4), beginning with the *nature* of the material thing, nevertheless this knowledge which arises from sense, never in the state of the present life reaches a point where the ties are cut with its sensible origin, where one may know without reference to phantasms: "... Our intellect both abstracts intelligible species *from* phantasms, in so far as it considers the natures of thing in a universal way; and nevertheless it understands them *in* phantasms—since it cannot understand those things whose species it abstracts except by turning to the phantasms, as was said above" (*Ibid.*, q. 85, a. 1, ad 5). Even should one rise above a "discontinuous model of motion" (p. 25) to a description in "abstract mathematical terms" (*Ibid.*), one has not left the senses behind: "Our intellect is endowed to know species through abstraction from phantasms—and therefore those species of numbers and figures which one has not *imagined*, one cannot know either actually or habitually, except perhaps in general and in universal principles, which is to know in potency and confusedly" (*Summa Theol.*, I, q. 86, a. 2, ad 2).

From the foregoing it is clear, using the original citation from Fr. Gilby derived from *Summa Theologica* I, q. 84, a. 6, concerning the three approaches to intellectual knowledge, as a background, that just as Professor Margenau's "passive intellect," with its exclusion of reason, represents the mechanistic sensism ascribed to Democritus, so his "factive intellect," with its autonomous contribution to knowledge not extracted from sense, tends to represent the knowledge by participation of separated intelligible forms attributed to the Platonists. The former of these two "intellects" might certainly be related to the cogitative power or particular reason as understood by St. Thomas, although whether it is Professor Margenau's intention so to relate it, is not clear. The latter of the two, however, can in no way be related to St. Thomas' understanding of the intellect *per se*, since where Professor Margenau makes it distinctive

of the "factive intellect" somehow to be independent of the senses, St. Thomas could not be more explicit that it is the natural function of the intellect to *abstract* the intelligible species from sensible things as *agens*, and to *receive* those intelligible species of sensible things as *possibilis*. As a matter of fact, far from being a hindrance, the body with its senses is that which enables the human intellect, weakest in the order of intellects, to attain to a precision in knowing reality which it would not have of itself. While the angelic intellect because of its perfection does not require senses, the human intellect does:

Now it is manifest that among the intellectual substances, according to the order of nature, the lowest are the human souls. It is the perfection of the universe which demanded that there should be different degrees in things. If therefore human souls were so instituted by God as to understand in the manner proper to the separated substances [i. e., without sense phantasms], they would not have perfect knowledge, but confused knowledge in common [i. e., they would have knowledge of equal universality but of inferior precision proportionate to an inferior intellect]. In order, therefore, that they might have perfect and proper knowledge of things, they are thus naturally instituted as to be united to bodies, so that they may thus receive from sensible things themselves the proper knowledge thereof—just as uneducated men cannot be brought to science except through sensible examples. Thus, therefore, it is evident that it is for the greater good of the soul that it should be united to a body and understand through conversion to phantasms—and yet it can be separated and have another manner of understanding. (*Summa Theol.*, I, q. 89, a. 1.)

Consequently, it is necessary to say that the type of intellect envisaged by Professor Margenau in his "factive intellect," which is, so to speak, stimulated by the senses, but basically perceptive in a way transcending the senses, is really in St. Thomas' terms a type of angelic intellect, the very type that does away with the *intellectus agens* and its humble function.

Such being the case, that is, in a human intellect which embraces not one, but both of the extremes envisaged by St. Thomas, namely, the purely sensory, and the purely intelligible—which sees the "desk" of Eddington as not one, but two—

there arises indeed a problem when it is question of relating the two. This problem is posed by Professor Margenau in terms of relating intelligible "constructs" to sensory "percepts" in the harmonious manner terminating in the experimentally validated scientific knowledge of "verifacts." To relate the two extremes harmoniously Professor Margenau proposes what he terms "rules of correspondence," which while not described in detail are basically understood as being connecting links between extremes, between "sense and reason . . . polar extremes of activity within the cognitive process" (p. 30). Such a situation does *not* exist in the thought of St. Thomas, since not having begun with the two extremes, but rather with the "middle way" (p. 8) of Aristotle, he is not faced with the problem of combining them. In effect, human knowledge properly speaking is neither purely sensory, nor purely intelligible, but rather the *intelligible knowledge of sensible things*. For St. Thomas the *same* desk of Eddington is perceived in its sensible aspects by the senses; in its intelligible aspects, subsequent to abstraction, by the intellect. By the former it is perceived as a particular, sensible, material thing; by the latter it is perceived in its universal nature, not as a nature which *exists* apart, but as existing solely *in* individual things, separated by *abstraction* only.

Speaking of the two "desks" of Eddington, one sensible, one abstract, Professor Margenau states that one cannot be understood in terms of the other: "To say that the desks are logically identical requires an understanding of A in terms of B and such understanding is wholly lacking" (p. 26). This St. Thomas would deny, affirming that it is impossible to understand the abstract desk in terms of anything but the concrete desk, since all knowledge of the former must be derived from sensible knowledge of the latter. This is not a matter of *a priori* proclamation: What does *experience* yield? Nothing but the confirmation of this. It is the statement of the possibility of being able to do without sense that requires proof and confirmation. If one affirmed the abstract "desk" as different from the concrete "desk," one would be in error; it is only

because abstraction, in affirming the nature and leaving behind the individual material characteristics, does not affirm the abstract desk to be such in *reality*, but only in *knowledge*, that truth is maintained and the two "desks" are seen, not as two independent realities, but as two views of the *same* reality—one sensory and individual, one intellectual and universal.

Consequently, St. Thomas would not, as Professor Margenau does, distinguish "a push or a pull from Newton's 'mass times acceleration'" as representing "ostensibly different kinds of experience" requiring an additional "rule of correspondence" to unite them (pp. 28, 29, 27). The latter would be referred to the former, not as that which is intellectual to that which is sensible but simply as 'part' to 'whole,' where, subsequent to universal abstraction, whereby one abstracts the universal 'push or pull' from the singular sensible instances thereof, one then proceeds by *formal* abstraction to consider one part of that universal, e.g., the mass, separately from the others. Thus, first of all one considers the common nature while leaving behind, or "abstracting from," the sensible singular; then one considers the universal part by part, while leaving behind, or "abstracting from," other parts. If one affirmed this universal, or this part, as separately existing independent entities, one would be affirming a figment of the mind; but if one, for clarity's sake, only *considers* one without the other, that is abstraction—necessary for the dim mind of man. But the object of contemplation still remains, not the abstract universal, but ultimately the real singular, now better understood through the universal. Thus the angels, with better intellects than man, do not have a lesser knowledge of sensible singulars than men, but a *better* one: "... One must not say that just as sense knows only corporeal things, so intellect knows only spiritual things—because it would follow that God and the angels would not know corporeal things. . . . But the superior power does those things which belong to the inferior power in a more excellent way" (*Summa Theol.*, I, q. 84, a. 1, ad 2). "There is a difference, nevertheless, in this [i.e., in the knowledge of sensible singulars] between angels and separated souls, for the

angels, because of the efficacy of their intellect, are able through such species [namely, infused species from God] not only to know the natures of things specifically, but also the singulars contained under the species; while the separated souls are able to know through such species only those singulars to which they are in some way determined . . ." (*Ibid.*, q. 89, a. 4). ". . . Since the nature of the soul is below the nature of the angel, to which this manner of knowing [i. e., through infused species] is natural, the separated soul does not receive through such species a perfect knowledge of things, but a knowledge as though in common and confused. Just as, therefore, the angels are related to the perfect knowledge of natural things, so the separated souls are related to an imperfect and confused knowledge. But the angels know through such species with a perfect knowledge all natural things—since all things which God produces in their proper natures, he produces in the angelic intelligence, as Augustine says" (*Ibid.*, q. 89, a. 3). From all of this, therefore, it is clear according to St. Thomas, that the ascendancy of the intellect, far from removing one progressively from the knowledge of sensible singulars, actually causes those singulars to be known more and more clearly in their sensible singularity—for the simple reason that the perfection of knowledge is not measured by the degree of abstraction, which necessarily must overlook certain aspects of a thing, but rather by the closer and closer approximation to singular reality, which is that which exists.

Clearly one cannot relate in matters physical Professor Margenau's "factive intellect," which substitutes its own insights for those derived from sense, with the reason of St. Thomas which, in natural science, "considers, but does not make" (*In Eth.*, I, l. 1, no. 1) the order of natural things. Nor yet would it be fair to consider Professor Margenau's "factive intellect" as entirely independent of sense, since Professor Margenau not only decries a too hasty "leap" into the unfettered ontological realm with possibly disastrous consequences (p. 36), but likewise he does not fail to point out the experimental verifications that have confirmed much abstract and mathematical reason-

ing: "The force of relativity springs from its postulate of invariance, quantum mechanics features principles of symmetry, and all these result in instances of empirical veridicality that are amazing" (p. 39). It would be true to say that such verifications are not simply mere accessories, since, speaking of the most successful "theory" of the moment, that of relativity, it is a fact that it had gained little currency even among the *cognoscenti* until the total eclipse of 1919 when there appeared to be actual verification of the curvature of space. The ultimate test, no matter what one says, of any theory, whether practical or seemingly most speculative, still tacitly depends upon some verification in the realm of observable reality, some explanation that adds intelligibility to observable things—"the unimpeachable evidence of the senses," as Aristotle says (*De Caelo*, III, 306a 15). Thus Professor Margenau's "constructs" too, would naturally require some confirmation in the world of "percepts" before anyone would give much faith to their purely "ontological" buoyancy. Professor Margenau would possibly not be so respected as a philosopher of science dealing with "constructs," if his competency were not based on a proven ability to deal with "percepts," with practical scientific problems.

There is, of course, in the realm of the intellect as understood by St. Thomas, an area where the "factive" element may enter. In effect, while St. Thomas, in dividing the sciences according to order in his introduction to Aristotle's *Ethics*, states of the order of natural things which are the subject of natural or physical science, that theirs is an order which reason "considers but does not make," he very definitely accords a factive role to reason in the other sciences mentioned: There is the order which reason, while considering nature, "*makes* in its own act," producing Logic or Rational Science; "*makes* in the activities of the will," producing Moral Science; "*makes* in external things," producing the Mechancial Arts (*In Eth.*, I, l. 1, no. 1-2). Such are the arts and sciences of things produced by men, whether syllogisms, moral acts, or jet planes. With respect to these, human reason is both "knowing and factive." These are, in contrast to the speculative sciences of natural things, the

practical sciences of things done by men, which are "operative according to the imitation of nature" (*In Pol., Prooem.*, no. 2).

Obviously there is in these an undetermined element initially, which man then determines by his own judgment "according to the imitation of nature." Examples of these would be, for example, the rules of spelling or grammar in Logic; the form of a state, whether monarchic, aristocratic or democratic in Moral Science; the style of a house, whether angular or curved, in the Mechanical Arts. Here the will, provided it does not disregard what the intellect may say of the "unmakeable" aspects of things, has an area in which it can "make" things to its own conceptions. However, none of these areas in which a legitimate "making" takes places under the impetus, not of the "factive intellect," but of the will utilizing the powers of the intellect in the production of something, appears to correspond to that area where the "factive intellect" of Professor Margenau is at work, namely the realm of the understanding of the physical world, where according to St. Thomas the intellect is precisely not "factive."

However, there is an aspect of the physical sciences as conceived of by St. Thomas where one finds something which might satisfy the characteristics of the "factive intellect" of Professor Margenau, and it is the preliminary *inventive* process in science as a forerunner to scientific certitude. Thus the mind is not able to go immediately and unerringly from problem to solution but ordinarily must first cast around uncertainly for the right answer. For example, in the case of the appearance of the motion of the planets, it is not possible immediately to trace out courses for them to which the appearances will then correspond. From the start of astronomy every astronomer tried to "invent," in the root sense of "discover" (from the Latin word *invenire*, 'to find') some design or figure of the motion which would satisfy the appearances. This "inquiry" or search (from the Latin word *inquirere*, 'to look for') continued until the 16th century when Copernicus produced the design which has since continued to be accepted. In the fruitful process of leading up to his system there were certainly, throughout

the centuries, many previous "makings" and discardings of designs.

This "inventive"—and one might well say "factive"—process is very much a part of the physical science of Aristotle and St. Thomas, an almost indispensable prelude to any eventual certitude. Thus St. Thomas describes the twofold process whereby the mind proceeds first to a tentative conclusion in the order of inquiry, and then subsequently puts that conclusion to the test by seeing if it is in accord with what is known, and if it is the only possible conclusion able to be derived therefrom—since as long as there may be other explanations equally capable of explaining the same appearances, one has not arrived at certitude that the explanation in question must be the true one: "... Human reasoning proceeds along the way of inquiry, or invention, from certain things absolutely understood, and then again along the way of judgment returns in the process of resolution to first principles, in the light of which it examines what has been found" (*Summa Theol.*, I, q. 79, a. 8. Cf. also *Q. D. De Ver.*, q. 15, a. 1, c). This twofold process of "invention" and "resolution" is further expounded when St. Thomas speaks of one of the ways in which "rational" is said of the procedure of natural science, namely, in the sense of proceeding by probable—or hypothetical—reasons:

Another way in which this procedure is called 'rational,' is derived from the term at which one stops in the proceeding. For the ultimate term to which the inquiry of reason should lead is the understanding of principles, by the resolving of things into which, we judge. When, indeed, this is done, the process or proof is not called natural [or 'rational'?], but a demonstration.

Sometimes, however, the inquiry of reason does not reach the final term, but comes to a stop in the inquiry itself—when, namely, there remains still to the one inquiring a way open to either of two contradictories. And this occurs when one proceeds by probable reasons, which are fitted to produce opinion and belief, but not, however, science. In this sense, then, the 'rational' process is distinguished against the 'demonstrative.' And one can proceed 'reasonably' in this way in any science, so as to prepare the way, through probable reasons, for necessary conclusions." (*In De Trin.*, 1. 2, q. 2, a. 1, c.)

This "rational" process, therefore, whereby one proceeds in the way of "inquiry" or "invention" by casting around for possible explanations, which later will be put to the test by seeing whether the explanation may be seen to proceed from previously accepted principles, seems very much like Professor Margenau's "factive intellect," which, to some extent independently of sense data—as would be the case, for instance, if the intellect could not see in the sense data any necessary reference to some given cause—searches and inquires for explanations or "constructs," which, say what one will, will have currency and acceptance almost wholly on their ability to explain what appears, whether directly or indirectly, to the senses.

A classic passage on the "inventive or inquiring reason," to which one has likened Professor Margenau's "factive intellect," at work is that in which St. Thomas speaks of the various theories propounded to explain the apparent motions of the planets:

One must take into consideration that certain anomalies, i.e., irregularities, appear in the motions of the planets—namely, to the extent that the planets seem to be sometimes faster, sometimes slower; sometimes stationary; sometimes in retrogression. Now this indeed does not seem to befit heavenly motions. . . . And therefore first Plato proposed this difficulty to Eudoxus, an astronomer of his time, who then endeavored to reduce the irregularities of this sort to a right order, by assigning diverse motions to the planets—which likewise the subsequent astronomers have tried to do in various ways.

Nevertheless it is not necessary for the suppositions which they found ('invented') to be true—for although, on the basis of such suppositions, the appearances are saved, one cannot, nevertheless, for that reason state these suppositions to be true, since perchance the appearances with regard to the stars may be saved in some other way, not yet comprehended by men. (*In De Caelo*, II, 1, 17, no. 451.)

The relationship of "inventive reason" to "judicative reason" is set forth by St. Thomas in his Prologue to the Exposition of the *Posterior Analytics*, where, in the course of dividing up the *Organon* of Aristotle, he also divides reasoning.

Arriving at the third act of the mind, which is reasoning strictly speaking, he proceeds to divide it into three processes which he likens to three processes in nature previously described. In the first, one arrives through necessary reasons at the certitude of science; in the second, through probable reasons at belief or opinion; in the third, through defect, at fallacy. He says therefore of the first two:

That part of Logic which serves the first process is called *Judicative*, since judgment [in the resolutive process] is with the certitude of science. And since certain judgment of effects cannot be had except by resolution to first principles, therefore this part is called the *Analytics*, i. e., 'resolutive.' . . .

The second process of reason is served by another part of Logic, which is called *Inventive*. Now finding is not always with certitude. Hence, concerning those things which are found ['invented'], judgment [by resolution] is required in order for there to be certitude. Just as in natural things, in those things which occur for the most part, there is a certain degree to be considered—since the stronger the power of nature, the more rarely does it fail in its effect—so also in that process of reason which is not with complete certitude, there is found a certain difference of degree, accordingly as one approaches more or less to perfect certitude. By means of this process, occasionally, even if one does not obtain science, one nevertheless obtains belief or opinion because of the probability of the propositions from which one proceeds. . . . (*In Anal. Post., Prol.*, no. 6.)

In Professor Margenau's terms, in the case of calculations by the "factive intellect" involving cases where "no finite set of observations enables theory to predict the place where an electron will strike the screen" (p. 17), where "the motion of the smallest particles was found to be subject to the laws of large numbers, any individual instance showing evidence of intractable caprice" (*ibid.*), where "the electron . . . should be described in abstract mathematical terms which suppress, in general, the reference to a specifiable position" (p. 25), in such cases, then, it does not seem to be stretching a point to say that such calculations, those, for instance, of the motions of the tiny electron, in all their tentative uncertainty and vagueness, fall

very nicely into the same area where St. Thomas locates the equally tentative calculations of the courses of the much larger planets, namely, in the realm of "inventive reason." This is the reason which frames hypotheses, the reason which casts around for some kind of an intermediate figure or construction such as that which links the squares on the sides with the square on the hypotenuse in the Pythagorean Theorem.

But how are these tentative solutions or conclusions, at the moment at best only the *probabilities* of *dialectics*, turned into the *certitude* of *science*? For Aristotle and St. Thomas they must be resolved back to first principles. What does this mean? It means that one must show that the answer one has arrived at must be the *only possible answer*—that there is no longer a path "to either of two contradictories," that the solution is necessary, i. e., cannot be otherwise. How is this done? This is done by showing that the conclusion, first happily discovered by the "inventive" process of trying various possibilities and hypotheses, is now seen to be the one which necessarily follows as the only possibility from certain, self-evident principles. ". . . The whole certitude of science arises from the certitude of the principles: for the conclusions are then known with certitude when they are resolved into the principles" (*Q. D. De Verit.*, q. 11, a. 1, ad 13).

Such principles are known through themselves: "These immediate principles are not known through any extrinsic middle, but through the knowledge of their own terms" (*In Post. Anal.*, I, l. 7, no. 8). The terms, in turn, are known *through the senses*: ". . . From sensible things there is had memory, and from memory experience, and from experience the knowledge of those terms which, once known, there is known those common propositions which are the principles of the arts and sciences" (*In Meta.*, IV, l. 6, no. 599). "From the very nature of the intellectual soul it befits man that immediately upon knowing what 'whole' is and what 'part' is, he should know: 'Every whole is greater than its part'—and likewise with other [first principles]. But what 'whole' is and what 'part' is, he is not able to know except through intelligible species received from phantasms" (*Summa Theol.*, I-II, q. 51, a. 1). Thus two

things are involved in the Thomistic concept of *science*: 1) That the principles from which the conclusions derive be the ones from which they do so with necessity of consequence, as the conclusion in the case of the Pythagorean Theorem necessarily follows from what has been previously established with regard to the congruence of triangles; 2) That the principles themselves be necessarily true, i. e., be derived from sense knowledge and having a necessary relationship between subject and predicate—as the concepts of ‘whole’ and ‘part’ are universals derived from material things, and the very nature of ‘whole’ is to be greater than ‘part.’

It is at this point, the point of resolution, that St. Thomas loses Professor Margenau. For Professor Margenau does not hold as irrefragable either that all propositions must be ultimately traceable for their data to the senses; or that the most basic principle, namely, the principle of contradiction even only on the purely logical plane, cannot be contradicted: “The discovery of non-Euclidean geometries and their use in physical explanation, the discovery of many different systems of logic including those which affirm a *tertium datur* [as against the ‘*excluded*’ middle or third’ implied in the principle of contradiction], together with many of the abstract pursuits just mentioned, have deprived us of confidence in *a priori* proofs. The conclusion seems inescapable that no proposition, formal or otherwise, carries within itself complete assurance of its truth” (p. 40 Parenthesis mine). Professor Margenau has already affirmed the possibility of the “factive intellect” introducing “autonomous” elements of “novelty” not derived from sense-data, in which he has radically separated himself from St. Thomas, and now, furthermore, he calls into doubt even the purely *logical* irrefragability of first principles such as the principle of contradiction, making the separation, if possible, even more complete.

At this point it would seem permissible to assess Professor Margenau’s presentation of St. Thomas and state that it cannot be called representative. Professor Margenau’s interpretation represents an entirely different outlook. An outlook such as

that in the first place natural intellectual knowledge need not stem from the senses, and in the second place that the knowledge itself need not conform to first principles as classically understood, is completely incompatible with St. Thomas, whether as fact or only possibility. The "factive" and "passive" intellects which Professor Margenau presents as suggested by St. Thomas in no wise represent the *intellectus agens* and *possibilis* of St. Thomas. They do not do so most basically because the "factive" and "passive" intellect thus presented do not represent two stages—the abstractive and receptive—of a *single* intellectual knowledge, but rather *two* different knowledges, deriving from two different potencies, namely, reason in one case and sense in the other. Even should one assimilate Professor Margenau's "passive" intellect, not to the *intellectus possibilis*, but to the *intellectus passivus* of St. Thomas, "which is the particular reason, i. e., the cogitative power along with the memorative and the imaginative" (*Summa Theol.*, I-II, q. 51, a. 3), and the "factive" intellect with the "inventive" process of reason in St. Thomas, there still remains the gulf between the two outlooks. The gulf consists in the fact that for Professor Margenau the whole natural content of the "factive" intellect, no matter how understood, does not depend upon the data received from the "passive" intellect, whereas for St. Thomas all intellectual processes originate from the senses, which in turn originate from external reality. This has as a consequence that intellectual knowledge is fundamentally a knowledge of external things, objective reality, and as a corollary that any denial of first principles is not simply a piece of logical audacity, but the denial of reality itself.

At this point, too, it seems permissible to speculate as to that which appears to underlie the viewpoint exposed by Professor Margenau. One point that is forcibly presented therein is the dichotomy between knowledge derived from the senses and the breadth of intellectual knowledge, resulting in what St. Thomas would consider a Platonic attitude. This would appear to be the outlook engendered by the initial Cartesian doubts as to the reliability of the senses, and the subsequent Kantian affirmation

as to the total incapacity of the senses to represent the true nature of things. Thus, to scientists like Einstein, in the *Evolution of Physics*, the true meaning of reality would seem to be something impenetrable, lying beneath the unrevealing surface of the senses, and the mind would be engaged simply in building models or "constructs" to harmonize with the appearances while remaining in the dark as to their objectivity—to use the image of Einstein, we are like people looking at the face of a clock and speculating as to what sort of internal machinery makes it run, without ever being able to find out. This sort of outlook, which not only leaves a free hand to the intellect, but actually obliges it to act on its own, independently, seems substantially that implied in the "factive intellect" of Professor Margenau.

But possibly even more is implied in the "factive intellect," the intellect which because of the inadequacy of the senses is necessarily "on its own." In effect, if the senses do not reveal the nature of things, and if one has no other direct contact with the outside world, on what rational grounds may one presume there is an intelligence behind the surface of things? If there are none—and granted the supposition that the senses do not necessarily represent the nature of things, there are none—then one finds oneself in a world where the only *known* intelligence is the *human* intelligence, where the first *order* introduced into the ostensibly unordered universe is that devised by the human intellect. Such an outlook is not optional, but unavoidable if one considers the universe solely as material and as the self-subsistent, self-explaining reality, devoid of intellect, but out of which, in the course of random evolution, the human intellect has now evolved at this particular stage of events. From such a point of view, the universe is basically unknowable, unordered, and all the order there is, is the order created artificially by the human intellect and superimposed upon or attributed to the basically amorphous and unintelligent cosmos. From such a point of view, if things are unpredictable beyond a very short range, it is not due to there being in an ordered universe some things which are intrinsically contingent and vacillating, nor to

any weakness on the part of the intellect, but simply to the fact that there is basically no order in the universe, no determined sequence of things, to start with. If things happen as predicted it is merely the result of a happy sequence in things which has come about by chance for no particular reason, has no particular significance, nor any sure duration.

Although Professor Margenau does not deny nor affirm that there may be a causative Intelligence responsible both for us and the surrounding cosmos, nevertheless the picture he traces in his final section of the outlook of modern science *vis-à-vis* St. Thomas, seems compatible with such an outlook, the outlook that the incertitude of knowledge and predictability is due primarily, not to weakness of intellect, but to the basic indeterminacy of an unintelligent universe itself.

Professor Margenau begins with a survey of the contemporary outlook, objecting to the pedestrian view of science and science courses as no more than a "catalogue of dead but certified facts" (p. 45); scientific laws as "inductive generalizations of observational experience, never as bold conjectures, as ideas defying the knowledge of their day . . ." (*ibid.*). To such a view, research is "like the solving of a picture puzzle" (p. 48), and the universe itself simply a somewhat larger puzzle, which in the optimists' view some day "will be solved and the happy millenium will begin" (*ibid.*).

This is, of course, the deterministic, 19th-century view of science, to which Professor Margenau now opposes a concept of science as "progressive, . . . a scientific problem is never completely solved, . . . research continually reforms and alters the picture which was thought at an earlier time to be already finished" (*ibid.*). Now the good teacher will strive to turn this into a "quest for meaning" (p. 46), meaning which goes beneath the surface of the facts, illuminating them; he will, "in a spirit of adventure, suggest Joule's and Mayer's exciting conjecture as a captivating idea and then verify it instance by instance" (p. 49).

How does science grow under such an impetus? Professor Margenau devotes six pages to describing the process according

to the analogy of a crystal, starting from the liquid state: "Every element of liquid moves in random fashion, and if the pattern of motion is made visible it is observed to have the existential beauty of irregularity and caprice" (p. 50). Predictions do not attain detail; the order is "short-range order, a correlation function falling to zero beyond the second or third neighbor to a given molecule" (*ibid.*). When to the "amorphous liquid mass," "small crystalline fragments known as seeds" are added, crystallization, with its pattern "clear, orderly and predictable" may be stimulated (p. 51). Says Professor Margenau in explanation: "I think of human experience as the amorphous liquid mass, of science as a crystalline growth which imparts order to the shapeless mass" (*ibid.*). To the unordered liquid state which is human experience, and where predictability extends only a few short steps, belong the "domains vaguely formalized as ethics, politics, history and religion . . . a large part of sociology, economics, anthropology and psychology; it is present in the so-called biological sciences and, in a certain measure, in the physical sciences as well" (pp. 52-3). Where "short-range order" prevails, that is, in the experiential domain as yet unregularized by science, the "philosophy adequate to the character of primary experience is existentialism" (p. 53), presumably in its role of branding any appeal to fictitious universal law a cowardice, and sternly admonishing each to be a law unto himself.

But to the extent that the crystallizing, regularizing effect of science extends, even though in unpredictable directions, in the amorphous experiential mass, what has one the right to expect? "There is no end to the process of growth. The shapeless matrix of our experience is unlimited, and the crystal will never span it all" (p. 54). The puzzle will never be completely solved; there will always remain uncrystallized areas as yet impervious to science: "What I foresee is an infinite crystal growth into an amorphous domain whose volume is likewise infinite yet vastly greater" (*ibid.*). Beyond the regularized world of the "rationalist" will always lie the unregularized world of the "existentialist": no matter how far the former

advances, the latter still stretches out beyond him; the knowing is always encompassed by the unknowing. Sometimes the wrongly crystallized even recedes back to the liquid state again: "wrong" knowing returns to unknowing again.

How does St. Thomas fit into all this? How is he seen through this vista? Professor Margenau in conclusion perceives him "almost in an attitude of benediction" upon the concept of an infinitely growing rationalization of things, always encompassed and contained, one might say, by an even more infinite area which escapes rationalization. Why should St. Thomas bless this concept? It is felt that he would because he, too, was a great crystallizer, but at the same time, in dynamic fashion, saw the trajectory of truth as always transcending the limits of the present—in distinction to those who wish to "admire nothing but the fixed structure of his system . . . invest him with an aura of final and eternal truth" (p. 56). Professor Margenau terminates his Aquinas Lecture with an excerpt paraphrased from *Summa Theol.*, I, q. 14, a. 8, ad 3: "Natural things lie midway between God's knowledge and ours. Human science derives from them, and they derive from God's own vision." These words indicate, says Professor Margenau, that the saint himself ascribed final and eternal truth to God, "holding that man must search for it in indirect and derivative fashion" (p. 56).

Little exception could be taken to these words. According to St. Thomas, this might be called the "way of discovery," or *via inventionis*, at its best: "For according to the path of discovery [or 'invention'], we arrive through temporal things at the knowledge of eternal things, according to the word of the Apostle, *The invisible things of God are clearly seen, being understood by the things that are made*" (*Summa Theol.*, I, q. 79, a. 9). However, St. Thomas does not stop there, but rather affirms that once one has arrived at a knowledge of eternal things through temporal things, one can then in the "way of judgment," use that knowledge of eternal things to judge temporal things with certitude: "Now in the path of judgment, from eternal things once known we judge of temporal

things, and dispose temporal things according to the notions of eternal things" (*ibid.*). This reflexive certitude is noted again elsewhere: "... Sensible effects, from which natural [science] demonstrations proceed, are more known to us in the beginning. But when we shall have arrived by means of them at the knowledge of first causes, from the latter there will appear to us the 'reason for which' [*propter quid*] of those effects from which the demonstrations 'that it is so' [*quia*] are proved" (*In De Trin.*, l. 2, q. 1, a. 1, ad 9). In other words, having first proceeded from effect to cause in a *quia* demonstration, the intellect through its knowledge of first causes, is now able to perceive something of the proper reason of the original effects, to know the *propter quid*. However, this does not mean that certitude is not had until one has arrived at a grasp of divine science or metaphysics, for it is already possible in the science of *temporal* things, in natural science and mathematics: "... Necessary (and therefore certain) knowable things are also found in temporal things, concerning which are natural science and mathematics" (*Summa Theol.*, *loc. cit.*, ad 3. Cf. also *Q. D. De Ver.*, q. 15, a. 2, ad 3).

However, the certitude which can be had of natural things in natural science or physics, and which applies to the cases where the natures of things have been perceived, and necessary relationships—as in the proposition, "All sensible change requires three principles: subject, form and privation"—need not extend to *all* of those things, and especially to contingent things which are intrinsically uncertain as singulars. When it comes to such, one is in the "way of invention or discovery" again, having only probability about the outcome of singular contingent effects: "Now there are certain things in which it is not possible to have a resolution such that one arrive at the nature [*quod quid est*], and this because of the uncertainty of their being, as is the case with contingent things as contingent. Whence such things are not known through their essence [*quod quid est*], which is the proper object of the intellect, but in another way, namely, through a certain conjecture about those things concerning which full certitude cannot be had" (*Q. D.*

De Ver., q. 15, a. 2, ad 3). But if one cannot have certitude about contingent things as contingent, that is, for example, when a contingent singular cause is in the process of producing a singular contingent effect, one *can* have certitude not only about necessary things, but also about contingent things in the universal order: "... Contingent things may be known in two ways. One way is according to universal notions; the other way, as they are in particular. For the universal notions of contingent things (as for example the concept of sensible change) are immutable, and according to this aspect demonstrations are found and the knowledge of them belongs to the demonstrative sciences. For natural science is not only of necessary and incorruptible things, but also of corruptible and contingent things" (*In Eth. Arist.*, VI, l. 1, no. 1123).

To return to Professor Margenau's original representation of the status of human knowledge *vis-à-vis* the surrounding world in terms of the analogy of a spreading crystal in an amorphous liquid, it is clear that this analogy lends to the idea of a world which is not just unknown and unordered *to us*, but unknown and unordered *in itself*: reason is not *in it*, we impart reason *to it*—"science . . . imparts order to the shapeless mass." In effect, Professor Margenau has referred—and just how figuratively is not certain—to his subject-matter as having "the existential beauty of irregularity and caprice." The idea of the *source* of intelligibility that seems to fit best in this picture is that of the human reason as a little island in the midst of the irrational, gradually extending *its* rays into the hitherto shapeless mass. It is true that Professor Margenau terminates his lecture with reference to God as the source of the natures of things, but it is not quite clear whether he is *affirming* an over-all divine order, or simply underscoring what he considers to be St. Thomas' *denial* of there being any final truth in *things*. Needless to say, St. Thomas holds that there can very definitely be final truth in things perceived, and not only in the necessary things, but even in the contingent things. Thus the truth once attained need never be modified: "... The intelligible species which are in the possible intellect cannot be

corrupted by anything contrary, since nothing is contrary to the consideration of intelligible things. . . . The habit of science in so far as it is in the intellect remains in the separated soul. . . . Nothing prevents someone who is less good from having some habit of science in the future life which someone who is better does not have" (*Summa Theol.*, I, q. 89, a. 5. and ad 2). Plainly, then, for St. Thomas, things can not only be known definitively in this life, but once known they are known for good.

St. Thomas, therefore, has an entirely different picture, not only of the human intellect, but also of the world around him, than does Professor Margenau. Nor is this an accident. In effect, the idea of an amorphous world of the senses to which the human intellect *imparts* order, to which some of Professor Margenau's images lend themselves, naturally implies two *different* levels of thought—a sense level devoid of intelligibility, an intellectual level which *adds* reason to the basically irrational. On the other hand, the idea of a world of the senses which represents an order *already there*, instituted by the divine mind producing things according to a pre-conceived order, naturally implies a single unity of knowledge—sense knowledge which contains within itself in a potential state (actualized by the agent intellect) the outlines of an intelligible order received, upon abstraction, into the possible intellect.

Since the order is already in the universe, the unintelligibility, as states Aristotle, derives more from *us* than from the *universe*: "Perhaps, too, as difficulties are of two kinds [i. e., subjective and objective], the cause of the present difficulty [in investigating the truth of things] is not in the facts, but in us. For as the eyes of bats are to the blaze of day, so is the reason in our soul to the things which are by nature most evident of all" (*Metaphysics*, II, 993b 5, referred to by St. Thomas in, for example, *loc. cit.*, I, 1, no. 284; *S. T.*, I, q. 1, a. 5, ad 1; *Contra Gentes* I, c. 3; II, c. 77; III, c. 25; *In De Trin.*, I, 2, q. 1, a. 4, c.; *De Spir. Creat.*, a. 10, ad 7; *In L. De Causis*, Proem., n. 4.)

But what kind of order *is* there in the universe? If it is not

a random, unintelligent affair, but the product of a divine mind, then must not everything happen with a rigid, undeviating determinism? So the determinists thought, when they first unearthed unsuspected order and predictability in the universe. Such was the determinism of Laplace, although in a God-excluded world. But it was not the determinism of St. Thomas, which allowed for both necessary and contingent events, for certainty and uncertainty. Consequently when the world of Laplace toppled with the appearance of relativity, quantum mechanics, the uncertainty principle, the non-rigid world of St. Thomas did not topple. Ironically, however, the extremist deterministic view which was to supersede the more easy-going world of St. Thomas, has now, on the recognition that some things, which it said were determined, were actually undetermined, led to a precipitation toward the opposite extremist view, that *nothing* is determined, that *everything* is random. But the system of St. Thomas, having had before, and having still, adequate accounting for chance and indeterminism, had no need for such drastic house-cleaning—which now, alas, has to find a way to consider even what appear to be maddeningly regular and determined events as somehow irregular and undetermined.

And what is the world-view, the *Weltanschauung*, of St. Thomas that allows for the harmonious coexistence of both the determined and the undetermined, the predictable and the unpredictable, the certain and the probable? It is succinctly expressed in the view of nature to which St. Thomas aptly compares the matching processes of reason in his Prologue to the Exposition of the *Posterior Analytics*:

In the acts of nature there is found a threefold diversity. For in certain of them, nature acts with necessity, in such a way that it cannot fail. In certain other acts nature operates for the most part, although it can at times fail in its proper act. Whence, in such circumstances there must be a twofold act: one which is for the most part, as when from seed there is generated a perfect animal; the other when nature fails in that which is according to it, as when from seed there is generated something monstrous because of the corruption of some principle.

And these three are also found in the acts of reason. For there is a certain process of reason which induces necessity, in which it is impossible for there to be a defect of truth; and through such a process the certitude of science is acquired. There is another process of reason in which, as in the greater part, truth is arrived at, not, however, having necessity. The third process of reason is that in which reason deviates from the truth because of a defect in some principle which should have been observed in reasoning. (*In Post. Anal., Prol.*, no. 5.)

Clearly, with such a concept of the universe as this, and with types of reasoning to parallel it, allowing both for certain and rigidly predictable events, and uncertain and at best only probably predictable events—and, as the exceptions which destroy the unanimity of the latter, the absolutely unpredictable accidents—one is able to assimilate and integrate all the varied events which cross the threshold of human consciousness. Such is the world of St. Thomas, a world where the necessary and the unpredictable live side by side, and in which, if one is attentive, one need not be thrown into a panic by failing to distinguish one from the other.

But does not such a world, with its frank admission of random and chance alongside the determined and the necessary, introduce an element incompatible with the tenets of divine omniscience? For divine omnipotence does not require of those who acknowledge it the denial of their senses or reason—and reason reveals the presence of chance or hazard. In effect, to deny it, to deny the possibility of something occurring which has no predictable *per se* cause, is to place oneself in the impossible situation resulting from the deterministic position that every effect must follow from some definite given cause, such that, the adequate cause having been posited, the effect must necessarily follow: the history of every event is a sequence of *per se* causes. This is described by Aristotle as follows: “Will A exist or not? It will if B happens; and if not, not. And B will exist if C happens. And thus if time is constantly subtracted from a limited extent of time, one will obviously come to the present. This man, then, will die by violence, if he goes out; and he will do this if he gets thirsty; and he will get thirsty if something

else happens; and thus we shall come to that which is now present, or to some past event. For instance, he will go out if he gets thirsty; and he will get thirsty if he is eating pungent food; and this is either the case or not; so that he will of necessity die, or of necessity not die" (*Meta.*, VI, 1027b). In other words, if an ultimate event may be traceable to the causes which immediately preceded it, as necessary causes, conversely the one who posits the first cause is, by this *per se* chain, the cause of the ultimate event: the one who puts the condiment in the food which makes one thirsty, is the cause of the death of the man who meets his end when he walks out of the door to get a drink and runs into robbers.

It is necessary, therefore, if one is not to involve oneself in the unrealistic system entailed by determinism—the very determinism of Laplace who theorized that if one knew the exact position of every particle and every force in the universe at a given moment, one could predict with absolute certainty the state of things at the succeeding moment—that one recognize alongside the *necessary*, the *contingent*: alongside that which cannot not be, that which is able not to be—for example, a cause which, though acting may not produce its effect. As St. Thomas concludes from the situation expounded by Aristotle, "Now this is impossible, namely, that all future events come about with necessity. Therefore those two suppositions are impossible from which this situation follows: namely, that every effect whatsoever have a *per se* cause; and that once the cause is posited, it be necessary that the effect be posited. For from this would follow what has already been stated, that of any future effects certain causes would have already been posited (since future events would not only be reduced to the present, as in the example given; but likewise, present events would be reducible to causes in the past: thus the future has already been caused in the past with iron-bound necessity" (*In Meta.*, VI, l. 3, no. 1200). Therefore the overthrow of determinism by the introduction of uncertainty is a triumph possible only for a line of thought previously wedded to determinism, a triumph denied

Aristotle and St. Thomas since they had already definitively excluded determinism from the start.

But having excluded determinism from the start, how then do Aristotle and St. Thomas arrive at a predictable ordered universe? They do this in a progressively ascending process. In effect, they first point out that events which may be chance and unrelated on a lower level, may be intended on a higher level: thus, the simultaneous blooming of two flowers in a flower-bed is accidental and unpredictable so far as the relation of the two flowers to each other is concerned—there is nothing in one flower that allows one to predict that when it blooms another flower should bloom—but from the point of view of a higher, more universal cause, such as the sun, shining equally and simultaneously on both flowers, such a thing is predictable (*Ibid.*, no. 1206). Thus one has the traditional example of the master independently sending two servants to the same place by different routes: their meeting will be unpredictable so far as any prevision on their part is concerned, but it will be according to plan so far as the master is concerned. (Cf. *Summa Theol.*, I, q. 116, a. 1). But such unpredictability is the sort which would be eliminated by the universal knower of determinism. And therefore Aristotle and St. Thomas do not fail to mention that even universal causes in the natural order may be fallible in their effects: the sun may shine and one flower may bloom, and the one beside it may not because a worm has done away with its roots. In other words, even if the cause should work properly—which is not necessary in every case—the indisposition of the matter being acted upon may thwart it. Likewise the rational soul, not being subject to material causality, may counteract the normal procedure of material causes even on a universal plane: the two flowers may not bloom simultaneously because John Doe has decided to uproot one of them. Finally, there is in less universal causes the possibility of weakness on the part of the agent itself, and of the chance concurrence of two unrelated causes on the same plane, as when a hungry bird should arrive on the spot just at the same moment the flower seed has fallen on the earth. These

various possibilities are thus outlined by St. Thomas: "If therefore we should reduce those things which are here contingent to their proximate particular causes only, many things are found to come about accidentally. This may be either because of the concurrence of two causes, one of which is not contained under the other—as when outside of my intention robbers come upon me: for this concurrence is caused from a twofold motive force, namely, mine and the robbers.' Or it may be because of the deficiency of the agent, to which weakness happens so that it is not able to arrive at the intended end—as when someone falls on the way because of exhaustion. Or it may be also because of the indisposition of the matter, which does not receive the form intended by the agent, but of another sort, as occurs in the monstrous births of animals" (*In Meta.*, VI, l. 3, no. 1210).

So effective is Aristotle's statement for the need to recognize chance in things, that St. Thomas, after expounding and concurring with it, goes on to say: "One must take notice of the fact that the things which the Philosopher here transmits appear to eliminate certain things which are laid down by some according to philosophy, namely, fate and providence" (*Ibid.*, no. 1203). In effect, according to those who hold for fate in the present context, all things may be traceable to *per se* causes in the heavenly bodies; according to those who hold for providence, everything is ordained by God and therefore nothing is the result of chance. While conceding that the Aristotelian outlook, which admits both of the indisposition of matter and of the intervention of human free will as thwarting the effect of the heavenly bodies on things below in a given case, does away with fate, St. Thomas proceeds to show that it nevertheless harmonizes with providence. He begins with a principle:

Now in evidence of these things it should be considered that the higher a cause is, to so much the more does its causality extend. [Cf., *Summa Theol.*, I, q. 14, aa. 5, 11; q. 22, a. 2.] . . . The ordination, then, which is in the effects from some cause, extends only so far as extends the causality of that cause. For every *per se* cause has

determined effects which proceed according to a certain order. It is therefore plain that effects related to some lower cause appear to have no order, but coincide with each other accidentally, which, should they be referred to a higher common cause, are found to be ordered and not conjoined accidentally, but produced simultaneously by one *per se* cause [as in the case of the two flowers blooming together]. (*Loc. cit.*, no. 1205.)

What is the hierarchy of higher and lower causes?

Now there is found in things a threefold gradation of causes. There is first of all the *incorruptible* and *immutable* cause, namely, the divine cause. Secondly, under this is an *incorruptible* but *mutable* cause, namely, the heavenly bodies. Thirdly, under this are the *corruptible* and *mutable* causes.

The causes, therefore, in the third degree are particular and determined to their proper effects according to each species: for fire generates fire, and man generates man, and a plant, a plant.

But the cause in the second degree is in a certain way universal, and in a certain way particular. It is particular, indeed, since it extends to a certain determinate genus of beings, namely, to those things which are produced in being through motion—for it is a cause which moves and is moved. It is universal, however, since its causality does not extend to one species of mobile things only, but to all, which are altered and generated and corrupted: for that which is the first moved thing must be the cause of all subsequent mobile things.

But the cause in the first degree is absolutely universal: for its proper effect is *being*—whence, whatever is, and in whatever way it is, is properly contained under the causality and ordination of that cause." (*Ibid.*, no. 1207-9.)

As has been seen, the lowest causes can fail in their effects for various reasons, such as the collision with another opposite cause on the same level; and this can even happen in the case of the more universal causes, not through any defect on their part but because of indisposition of the matter or human independence. The effects, however, which *per se* causes are intended to produce, do come about *for the most part*, as the regularity of nature attests. It is the unforeseeable exceptions which make such things "for the most part" and not "always," which constitute the accidents that have no *per se* cause: as

St. Thomas says, 'No *per se* nature can bring this about, that someone intending to dig a grave, should find a treasure" (*Summa Theol.*, I, q. 116, a. 1). Chance, therefore, very definitely exists, What, then, of divine providence?

. . . If contingent things are further reduced to the highest cause, nothing can be found which escapes its order, since its causality extends to all things in so far as they are *beings*. Its causality cannot be impeded, therefore, by the indisposition of matter, and the dispositions of the latter do not escape its order, since it is an agent in the manner of conferring being, and not solely in the manner of moving and altering. . . .

It remains, therefore, that all things which come about here, as referred to the first divine cause, are found to be ordered and not to exist accidentally—although by comparison to other causes they may be found to be accidental. And because of this it is stated according to the Catholic Faith that nothing takes place randomly or fortuitously in the universe, and that all things are subjected to divine providence. Aristotle, however, is here speaking of the contingent things which take place here in relation to particular causes. . . . (*Ibid.*, no. 1215-6.)

But lest the affirmation of the inability to predict what will happen in *every* case as to the action of lower and intermediate causes on the one hand, and the absolute ordination and control of *all* things by the highest divine cause on the other hand, should seem to reduce contingency and unpredictability to subjective human ignorance, St. Thomas continues:

Now, however, it remains to see how the laying down of fate and providence does not remove contingency from things, as though all things were to come about through necessity. And concerning fate it is already plain from what has been said. For it was shown that although the heavenly bodies and their motions and actions as regards themselves have necessity, nevertheless their effect upon these lower things can fail, either because of the indisposition of matter, or because of the rational soul, which has the free choice of following the inclinations deriving from the impression thereof or not—and so it remains that such effects come about not by necessity but contingently. . . .

But with providence there is a greater difficulty. For divine providence cannot fail. These two things are impossible of co-existence:

that something should be foreseen by God, and that it not be done. And so it seems that from the fact of providence having been laid down, that its effect must necessarily follow.

But one should realize that there depend from the same cause both the effect and all the *per se* accidents of that effect. For just as man is from nature, so also all his *per se* accidents, such as to have the power to laugh, and to be susceptible of teaching of the mind. But should some cause not produce man absolutely, but such a man, it will not belong to it to constitute the *per se* accidents of man, but only to make use of them. For the political scientist make man *civic*; nevertheless he does not make him *susceptible to teaching of the mind*—but rather he uses this property in order to make man *civic*.

But as it was said, being as being has for its cause God himself. Whence, just as *being* itself is subject to divine providence, so also all the accidents of being as being, among which are the *necessary* and the *contingent*. [Cf. *Summa Theol.*, I, q. 22, a. 4, ad 3]. Therefore it belongs to divine providence not only that it should produce this being, but that it should confer upon it contingency or necessity, it has prepared mediate causes for it, from which it follows with necessity or contingently. Therefore the effect of each thing is found to have necessity accordingly as it is under the order of divine providence. From which it occurs that this conditional is true: 'If something is foreseen by God, it will be.' [Cf. *Summa Theol.*, I, q. 14, a. 13, ad 3].

But accordingly as a certain effect is considered under the order of a proximate cause, thus not every effect is necessary—one is necessary and another contingent according to the analogy of their causes. For effects in their natures resemble proximate, not remote, causes, to the condition of which latter they cannot attain.

Thus, therefore, it is evident that when we speak of divine providence, we should not say only, 'This is foreseen by God that it should be,' but 'This is foreseen by God that it should be contingently or that it should be necessarily.' Whence it does not follow according to the reasoning of Aristotle here presented that from the fact of the laying down of divine providence, all effects be necessary—rather it is necessary that the effects be either contingently or necessarily.

This indeed is peculiar to this cause, namely, to divine providence. For the remaining causes do not constitute the law of necessity or contingency, but use it as constituted by a superior cause. Whence there is subjected to the causality of any other cause only that its

effect be. But that it be necessarily or contingently depends upon a higher cause, which is the cause of being as being, from which the order of necessity and contingency in things derives. (*Ibid.*, no. 1217-22.)

Professor Margenau's final words, taken from Fr. Gilby's version of *Summa Theologica* I, q. 14, a. 8, ad 3, were: "Natural things lie midway between God's knowledge and ours. Human science derives from them, and they derive from God's own vision." We have already seen that God's vision, God's knowledge combined with will extends to all things, causing their very being, and in absolute order and clarity. To quote the very article from which the original excerpt is taken: "... It is necessary that God's knowledge be the cause of things, accordingly as it has the will conjoined to it" (*loc. cit.*). How minute is this knowledge, does it embrace the minute electron wholly and completely? Obviously it does, since whatever is in the electron and continues to be in the electron, is put there by God and maintained there by Him: God knows things because *He* makes them out of nothing and they exist only to do His bidding. "... Since God is the cause of things by His knowledge, as was said (a. 8 above), the knowledge of God extends so far as His causality. Whence ... it is necessary that the knowledge of God extend to singulars which are individuated through matter" (*Ibid.*, a. 11). What of the predictability of these singular in their uncertain future? "... Since it has been shown above (i. e., in a. 9 of q. 14) that God knows all things, not only those which are in act, but also those which are in His power, or that of the creature, and some of these are with respect to us future contingent things, it follows that God knows future contingent things. ... Now God knows all contingent things, not only as they are in their causes, but also as each of them is in act in Himself [i. e., in His knowledge, in which all things past, present and future to us, are *present* to His eternity]" (*Ibid.*, a. 13, c.). Thus all being, actual and potential, is known by God, because *made* by God, and follows the infallible course and order that He has laid down for it.

Finally, why has He chosen to create *contingent*, fallible

being, as well as *necessary*, incorruptible being? The answer is clear: "... God has produced things in being in order to communicate His goodness to creatures, and have it represented in them. And since it could not be adequately represented by one creature, He has produced many and diverse creatures, that what may be lacking in one with respect to representing the divine goodness, may be made up for by another. ... Formal distinction is of higher dignity than material. But formal distinction always requires inequality, since, as is stated (*Meta.*, VIII, 1043b 30), the forms of things are as numbers, in which the species vary through the addition and subtraction of unity. ... Just as, therefore, the divine wisdom is the cause of the distinction of things because of the perfection of the universe, so, too, of inequality" (*Summa Theol.*, I, q. 47 aa. 1, 2).

How are *we* in knowing things in this universe which, even in its most contingent, indeterminated aspects, is absolutely known and ordered by the First Cause? According to Aristotle and St. Thomas *necessary* things may be known even in the natural sciences: "... It is necessary that he who lives shall one day die; for already some condition has come into existence, e. g., the presence of contraries in the same body" (*Meta.*, VI, 1027b 5). With this statement of Aristotle, St. Thomas agrees: "... We say that a living thing will die is necessary absolutely, since it follows by necessity upon that which has already taken place, namely, the presence of two contraries in the same body through a mixture. For this conditional is true: 'If any body is composed of contraries, it will corrupt'" (*In Meta.*, VI, l. 3, no. 1199). At the same time some things are *contingent*: thus Aristotle continues: "But whether he is to die by disease or by violence is not yet determined." And St. Thomas: "But that this man should die through sickness or violence, does not yet have any cause laid down from which it follows with necessity" (*Ibid.*, no. 1200).

What then of predictability? *Necessary* things, when known, do not vary either in the present or in the future. Things that happen *for the most part*, probable things with varying degrees of probability depending upon the power of the cause to impose

itself upon matter, may be known in their causes with respect to the future. "If future things are in their causes as that from which they proceed with necessity, they are known with the certitude of science—as the astronomer foreknows a future eclipse. But if they are thus in their causes that they proceed from them 'for the most part,' they may be accordingly known through a certain conjecture which is more or less certain accordingly as the causes are more or less inclined towards their effects" (*Summa Theol.*, I, q. 86, a. 4).

But what of the senses themselves, through which the knowledge of the universe reaches us? How penetrating and far-reaching are they? Already, as has been seen, Aristotle and St. Thomas place the difficulty in knowing not in any basic unintelligibility in things, but primarily in the weakness of the human intellect, the lowest in the scale, while the angels "know with perfect knowledge all natural things" (*Summa Theol.*, I, q. 89, a. 3). Although the senses of man are well-adapted to give him that precise knowledge of particulars which his universal knowledge might otherwise lack (*ibid.*, a. 1, c.), nevertheless they are not all-powerful. If St. Thomas does not speak of our inability to perceive the smallest bodies or particles, he does speak of our defects in contemplating even the largest bodies. Thus "the shakiness which happens to our sight because of distance), makes it seem as though a star is in motion . . . since it is no different so far as something seeming to move, whether the sight is moved or the thing which is seen—as is evident with those who sail along the shore that, because they are in motion, it seems to them that the mountains and the land are moving" (*In De Cael.*, II, l. 12, no. 405).

In conclusion, then, one is forced to say that the universe of Professor Margenau is not that of St. Thomas Aquinas. In effect, where the former seems to see an amorphous, infinitely-extending, indetermined mass, with, at its center, like a little island, the human reason making sense out of it from itself as a base; the latter sees the universe as wholly purposeful, ordered, significant, leading to God through the process of effect to cause—"through the divine effects we are led to the contem-

plation of God" (*Summa Theol.*, II-II, q. 180, a. 4) —in which the order that is *already* there awaits perception by our intellects, blinded like the eyes of the owl or bat when turned to the blaze of the sun. How can modern science say it is detached, and not anthropocentric, if it seems to affirm the *universe* is obscure because it may happen, at the moment, to appear obscure *to us*? The order which the "factive intellect" of Professor Margenau would *impart* to things in the physical sciences, is not the order which the reason of St. Thomas "would not make, but solely consider" [*In Eth.*, I, l. 1., no. 1], and order luminous in itself even when obscure to us, since even though, unlike God, we do not know in it the changing sensible singulars in their singularity, nevertheless we *do* know the universal, immutable essences of material things, and through them attain to an inchoative vision of divine things, which "scanty conceptions . . . give us, from their excellence, more pleasure than all our knowledge of the world in which we live" (*De Part. Animal.*, I, 644b 30; *Summa Theol.*, I, a. 1, a. 5, ad 1; I-II, q. 66, a. 5, ad 3; II-II, q. 180, a. 7, ad 3; *In De Anima* l. 1, no. 5; *In Lib. De Causis*, Prooem., no. 5).

Perhaps the most explicit summary of the divergence of the views of Professor Margenau and those of St. Thomas may be found in the passage where St. Thomas elaborates on the meaning of the Aristotelian expression, appearing in the *Physics*, that "art imitates nature." For Professor Margenau there is in the contemplation of nature, in addition to the knowledge of the senses, an additional, independent creative intellectual knowledge deriving from man's "active intellect." The resultant knowledge tends to be a composite of the objective and the subjective. In keeping with the rôle of this independent "agent intellect," one finds order in nature not so much as something already existing there, which the mind discovers, but rather as something which the mind constructs and projects upon an otherwise unordered universe. St. Thomas is at odds with both of these related views as his exposition of "art imitates nature" succinctly shows. By 'art' he means any 'sure ordination of reason whereby, through determinate means, human acts attain

to a due end' (*In Post. Anal.*, I, l. 1, no. 1). Why must this intelligent process whereby means are consciously ordered to an end *imitate nature*? It must do so for two reasons: 1) *All* knowledge derives initially from *nature* via the *senses*; 2) The intelligent process of art derives from the perception of the already existing *intelligent, ordered* process in nature, which art then parallels and copies in harmony with nature:

Now the reason why "art imitates nature" is because the principle of artificial activity is knowledge. But all our knowledge is received through the senses from sensible and natural things.

Therefore, then, are natural things imitable by art, because the whole of nature is ordered by some intellectual principle to its end, in such a way as for the work of nature to be seen as the work of intelligence, as it proceeds through determinate means to certain ends—which art likewise imitates in acting. (*In Phys.*, II, 1. 4, no. 171.)

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BOOK REVIEWS

The Advancement of Theological Education. By H. RICHARD NIEBUHR, DANIEL DAY WILLIAMS, JAMES M. GUSTAFSON. New York: Harper, 1957. Pp. 239 with index. \$4.00.

This work forms the second and final part of a study of the Protestant major seminaries of the United States and Canada which, set in motion by the American Association of Theological Schools and financed by the Carnegie Corporation of New York, began intensively on July 1, 1954 and continued over a period of fifteen months. The first part was published in April 1956 under the title *The Purpose of the Church and Its Ministry, Reflections on the Aims of Theological Education*. The director of the study was H. Richard Niebuhr, of the Divinity School of Yale University; the associate director, Daniel Day Williams, then of the Federated Theological Faculty of the University of Chicago; and the assistant director, James M. Gustafson, then pastor of the Congregational Church of Northford, Connecticut, and graduate student at Yale. These men were assisted by an advisory board consisting of a Methodist bishop, three officers of theological schools, a professor of theology, and three men in the active ministry. Information for the study was gathered first by questionnaires from all the accredited members of the American Association (apparently 75), from almost all the associate members (the statistics show 29), and from a considerable number of seminaries not affiliated with the Association; a supplementary inquiry was conducted by means of visitations to ninety of the schools, where interviews with administrators, teachers, and students made possible a deeper insight into the material already available in the questionnaires.

The study is very thorough and is clearly and interestingly presented. It is kept strictly within the limits of the Protestant seminary pattern with no reference, for purposes of comparison, to our Catholic seminaries and, indeed, except for the treatment of general educational problems, in which we could well learn from each other, such as the selection of students, testing procedures, pedagogical methods, and several other points, there is little common ground for comparison. The introduction of women students, for example, and the increase in the number of married seminarians (averaging about 60 per cent of the total present enrollment and running as high as 80 per cent in some schools), along with their concomitant problems, create a situation so far different from our own that comparisons

would be nugatory. Above all, the dogmatic unity and the central teaching authority to preserve that unity, which are of the essence of our seminary training as of every phase of our life, are not only absent from the picture but are considered abhorrent to "the Protestant principle of the freedom of the Christian man." (p. 44) Severe criticism is expressed of the "too many schools (which) are subject to a close guardianship by defenders of a faith once and for all delivered to some special group of saints. Their faculties find themselves under the suspicious scrutiny of groups or parties or, less frequently, whole denominations, that are unimpressed by the wisdom of Gamaliel; certain that they possess not only a truth but the whole truth and nothing but the truth." (p. 44)

The first two chapters, written by Niebuhr, discuss "Some Recent Trends in Theological Education" and "Trends in the Economics of Theological Education" and are, as might be expected, heavily statistical. We learn that the study classifies 180 institutions as Protestant theological schools, twenty-nine of which are in Canada; Bible colleges and institutes and some other schools which prepare men for the ministry but are less formally theological are not listed. In the twenty-year period under survey considerable improvement has occurred in the previous education of entrants: in recent years most have completed college before entering the major seminary. The major seminary course in most schools comprises three years; some have an extra year of internship or field work; there is a strong feeling in favor of lengthening the course. Problems arise from the disparity of philosophical training received by entrants and, in general, there are the usual difficulties about the selection of candidates. Testing procedures are increasingly used. The enrollment in Protestant theological seminaries is estimated at not less than 25,000 as of 1954-55, or two and a half times larger than it was twenty and thirty years earlier. The age, rank, academic and professional preparation, and salaries of faculty members are studied in detail; the development of the course of studies, the physical equipment of the institutions, and the sources of income complete the material investigated in these first two chapters. It is interesting to note that, on the basis of a study of twenty-six "typical" schools, the expenditure per student in 1954-55 is set at \$1,033.

It is in reading the third chapter, on "Problems of Government," also done by Niebuhr, that a Catholic reader feels especially grateful for a *Congregation of Seminaries and Universities*. Denominational institutions are able to approach some kind of uniformity in doctrinal content but one can only sympathize with the many situations where the rule is "every man for himself," whether he be professor or student.

The associate director, Daniel Day Williams, gives the report on faculties, courses of study, and teaching methods in chapters four, five, and six. There

is much in these chapters that is relevant to the work in our own seminaries: the type of professor, his professional preparation, the professor with ministerial background versus the one who elects the teaching life with little or no experience in the field, the extent to which the faculty member should be allowed to do outside work in parishes, in preaching engagements, etc., all these topics strike a familiar chord for the reader who is in Catholic seminary work.

In the discussion of the course of study, the problem raised by the diversity of interpretations of Christian faith is noted but the solution is left to the individual professors "with the confidence that the teacher who can show the relation of his field to the Christian cause will communicate this relationship to his students." (p. 83) It is in this chapter, too, that the possible need of a department of philosophy is implied when Williams writes: "... one of the common complaints of professors of theology today is the lack of adequate philosophical training among students. Further, with the present reign of positivistic philosophy in many universities, one is driven to ask whether it may not devolve upon theological schools to be among the centers which preserve the humanistic and spiritual tradition of Western philosophy against its dissipation." (pp. 87-88) The detailed discussion of the courses in this chapter is interesting and thought-provoking.

Chapter six, on "Theological Teaching in Classroom, Field, and Library," treats at great length of field work in its various forms, internship, and clinical training. In the light of Pius XII's observations in *Menti Nostrae* on the transition from seminary to pastoral life (p. 102 ff.) and of the *Sedes Sapientiae* there are many points of interest to us here.

The next two chapters are by the assistant director, James M. Gustafson. The first of these chapters has a special appeal because of the ten categories of student there described. Authorities of Catholic seminaries will, *mutatis mutandis*, recognize most of these types from their own experiences with seminarians. The second describes the school as community and gives considerable attention to the selection of students and to testing procedures. The religious worship of the students is also discussed.

Completing the study is a chapter on "The Line of Advance," giving a summation and recommendations. Dr. Niebuhr here expresses the opinion that "a new conception of the minister as pastoral director is emerging in the Protestantism of the United States and Canada." (p. 200) He sees the key problem in Protestant theological education here and in Canada as "that of providing and maintaining the most able corps of teaching theologians and theological teachers possible." (p. 201) As regards the students, he calls for improved selection procedures. In the matter of improvement of teaching, the result of the observations of the investigators and of the comments of administrators, teachers, and students is set forth,

in italics, thus: "*The greatest defect in theological education today is that it is too much an affair of piecemeal transmission of knowledge and skills, and that, in consequence, it offers too little challenge to the student to develop his own resources and to become an independent, lifelong inquirer, growing constantly while he is engaged in the work of the ministry.*" (p. 209) Methods of strengthening the faculties are proposed, and reorganization of the curriculum is recommended, with considerable attention given to lengthening the period of study and the ways in which this may be done. The chapter and the study are concluded with several pages on "Financing the Advance."

There is an appendix on "The Theological Education of Negro Ministers" in which Gustafson faces the picture of "the appalling shortage of well-trained Negro ministers, the financial plight of the dominantly Negro seminaries, the unattractiveness of the ministry to many of the best Negro college graduates, the relatively slow rate of increase of Negro B. D. enrollment, and many other factors (which) call attention to a major problem that American Protestantism as a whole must deal with." (p. 226) Some suggestions are made for meeting the needs.

If there emerges from this study the impression of a tighter organization of Protestant theological schools than Catholics may have thought existed, credit for such organization would seem to be due in large measure to such an agency as the American Association of Theological Schools. This association, principally an accrediting agency, has taken a very frank and honest look at Protestant seminaries; it has depicted the good and the bad; and it has made forthright recommendations. In the face of the manifold doctrinal divergencies found in the schools it would be fatuous to expect uniformity, nor does the Protestant wish such uniformity. But surely there should result from this study, if its recommendations are hearkened to, a better prepared beginner, a greater effectiveness in teaching and in learning, an improved community atmosphere, and a more effectual minister.

It would be good if our American Catholic seminaries could look to such an agency of our own for a similar frank appraisal and pointed suggestions. True, we have the specific directives of the Holy See, communicated through the Sacred Congregation of Seminaries and Universities, which insure doctrinal unity and correctness and prescribe many of the details of the discipline and life of the seminary. But the Holy See still leaves much for the bishops to determine in the light of varying needs and customs. Furthermore, not only because of the seminarians who discontinue their studies for the priesthood and are faced by the scholastic requirements of outside schools and for the priests who go out from our seminaries to teach and supervise, but because of the obligation which our orthodoxy and centuries-old traditions impose upon us to meet the highest educational

standards, we should constantly re-evaluate our work and stand ready for comparison with any other school, public or private. We cannot afford to go our own self-satisfied way, leaving it to our deposit of faith and our hoary traditions to see us through somehow or other. We have every reason to rejoice in the true faith that is ours but we can be recreant to that faith if we grow careless about the manner of its transmission, especially when our work is to train the future teachers of the faith. Why should we not then have an agency of our own which can, within the pattern set by the Sacred Congregation, propose minimum standards, check their fulfillment, make suggestions, and grant accreditation? We already have instruments at hand in the affiliation program of the Catholic University of America and in the potentialities of the National Catholic Educational Association. Why not plumb the possibilities? Then surely we can make great strides in the advancement of Catholic theological education.

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The Tragic Philosopher: A Study of Friedrich Nietzsche. By F. A. LEA.
New York: Philosophical Library, 1957. Pp. 354. \$6.00.

This is an interesting and useful one-volume introduction to the thought of Nietzsche. Written by one who is well aware of Nietzsche's power to attract the modern mind as well as repel the more traditional thinker, the book is a successful attempt to trace briefly the development of his thought from his philosophical conversion to Schopenhauer in 1865 to his mental breakdown after 1888.

The author, following the historical flow of Nietzsche's life, views this intellectual development as one of three stages: (1) Romanticism; (2) The Conquest of Nihilism; and (3) The Transvaluation of All Values. The dominant features of each stage are shown by analyzing the more important ideas of the major works pertinent to each of the three periods. In this analysis Lea allows Nietzsche a good deal of self-expression by giving a large number of texts judiciously chosen from his books and letters. The work thus becomes a nicely arranged tapestry of Nietzsche texts interwoven with Lea criticism. The Nietzsche who emerges from these pages is not a new one; those who know his works will readily recognize the description, but the story is told with an engaging sympathy by an author determined to treat Nietzsche as a serious thinker who must be reckoned with in our day. Although not primarily interested in the external facts of the phi-

losopher's life, the author gives enough of these to sustain the intellectual growth.

Lea emphasizes, and rightly so, the decisive effect Schopenhauer had on young Nietzsche at a critical moment in his life. Numbed by several painful experiences and without principles to guide him, for he had lost faith in his Protestant belief, Nietzsche was struggling to form for himself a philosophy of life when he began to read the "gloomy philosopher." Schopenhauer's concern with the harsh realities of existence, his denial of God, the analysis of the world as will to live, his glowing encomium of art—all these found an attentive response in the young reader. Quite naturally Lea designates this period as the Romanticism of Nietzsche, for it is during these years that he is absorbed in art and the philosophy of culture. And art, of course, at this period of his life meant the music of Wagner in whom Nietzsche saw "such an unconditioned ideality, such a noble seriousness, that near him I feel as if I were near the divine."

It is during this romantic period, too, that Nietzsche became fascinated with the myth of Dionysus. In the story of the dismemberment of Dionysus' body, its distribution, and ultimate reconstitution he saw a constant drama of all human life in which a primal parcellation could be restored to unity through the agency of art.

But Nietzsche was not one to remain long the disciple of any master nor long the friend of any man. Abandoning Schopenhauer and breaking with Wagner, he started a new stage in his life, his nihilism. Sick in body and isolated in soul, he passed through a period of haunting loneliness and intellectual torture which forced him to reconstruct his thought. Re-examining the ethical, religious, and artistic experiences which the romantics had declared led to a supreme metaphysical entity, he accepted the experiences as real but explained them in a completely naturalistic fashion.

As he now saw life, all human activity is derived more or less immediately from the simple instinct of self-preservation, that is, from the pursuit of pleasure and the avoidance of pain. What is useful for life becomes the true, while the harmful is the false or evil. Because reality is in constant flux, all human science is but unstable uncertainty. Truth is the creation of each man, a selecting of certain facts that make life more livable, an eliminating of others that might hurt and restrain human activity. But it is a selecting and eliminating that really explain nothing; the only true position, the only real truth is the truth that there is no truth.

His moral indifference follows quite naturally from this intellectual nihilism. All our actions are determined and hence free will is but the conflict among rival desires, with victory going to the strongest. As to good and evil, "there is nothing good, nothing beautiful, nothing sublime, nothing evil, in itself, but rather these are states of soul in which we bestow such

epithets on things." Thus one must decide good and evil for himself, and the critical norm for the judgment is each man's personal pleasure or pain, which at this stage of his philosophical life often seem identified with bodily health or sickness. But if there is no trans-subjective morality, if there is no objective good, neither is there any blame for evil. "All is innocence." This is the mark of the new freedom, this is his conquest of nihilism: to understand that there is no truth but our truth, no morality but our morality.

It is during this second period that he becomes more and more enthralled with the notion of the Will to Power as the ultimate constituent of reality. Described in terms of activity or energy or striving, the Will to Power is seen by Nietzsche to be man's authentic being, his inner self, his deeper reality.

The Will to Power had engendered among the Greeks, men of strong characters, fierce passions, and brilliant intellects. Because it was an aggressive energy it had often led other men to find satisfying fulfillment only in violent and savage wars. Now it should be employed in the war of ideas, in the battle of thought against the slave morality of Christianity, for the Will to Power had become increasingly debilitated by the nay-saying doctrine of Christianity with its denial of the passions, its cry of pity for the unfortunate, and its insistence on love for one's neighbor.

From this revolt against theism, especially in its Christian form, Nietzsche foresaw the rise of the new man, the new nobility, Superman. Superman is the man who will no longer endure the fetters of an externally imposed morality; he is the one who has lost all patience with the restraints of old traditions and customary ways; he is the man whose Will to Power surges to a fullness of power and a confidence of strength, a confidence and power that give him a persistent and perceptive consciousness of mastery over others; he is the man who judges all things in relation to himself and thus has that self-love and self-will that Nietzsche termed "the healthy and holy selfishness."

Now this self-love expresses itself in the creation of morals especially, for Superman is the man who for himself and by himself establishes his own good, his own morality. Emancipating himself from all subjection he sees virtue as his own self and his own self as his Will to Power. No longer stifled by decadent Christian morality, the new man will have the courage to use lesser men as instruments for his own purposes, he will be ready to enslave the weaker, he will be willing to exterminate "the physiologically bungled and botched." As Nietzsche boasted: "We, after all, are the nobles. It is much more important to maintain us than that cattle." It is all so calloused, all so brutal, all so prophetic of Nazism and Communism.

Men, the new men, the coming supermen making laws for themselves or transvaluating values, this becomes the master idea of the remainder of Nietzsche's life. His later works, e. g., *Beyond Good and Evil* and *The Genealogy of Morals*, are concerned with the problem and are sustained attempts to work out some of the historical, philosophical, and religious implications of the new doctrine.

Such is the study given us by the author, and, on the whole, it is a successful one. There are times when Nietzsche's doctrine could have been analyzed in sharper detail and there are occasions when Lea's criticism becomes fumbling and inept. But there is much to be recommended: the texts chosen to delineate the various stages of Nietzsche's thought show a discriminating judgment based on sympathetic study of the philosopher; the comparisons made of the different writings of Nietzsche bring out a surprising unity in his fundamental theses; and finally, Lea makes a constant endeavor to indicate his relevance to modern existentialism, especially that of the atheistic variety. In this regard Lea understands well that Nietzsche's atheism is the principle of his epistemology, not its conclusion. Thus the concluding pages of his book show how Nietzsche's loathing for God increased in crescendo until it became sheer hysteria hopelessly floundering in incoherent contradiction. But this might have been expected, for his atheism, like so many others, was not so much an intellectual position as a moral persuasion, as Zarathustra makes all too clear:

If there were Gods, how could I endure it to be no God:—Therefore there are no Gods.

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BRIEF NOTICES

Ethics: The Introduction to Moral Science. By JOHN A. OESTERLE. Englewood Cliffs, N. J., Prentice-Hall, 1957. Pp. 269. \$5.35.

"There are two basic reasons for having moral philosophy in a Catholic college. The first reason is for the benefit of the moral theologian, who must have this knowledge to know and teach moral theology. The second reason is that moral philosophy is needed for the moral theology course, or its equivalent, that is required in all Catholic colleges. On the college level, students should be expected to have a rational basis for the important truths of the Faith which they hold, perhaps especially, in these times, in moral matters. Moral Philosophy accomplishes this important function for the college student."

These words were spoken by John Oesterle at a meeting of the North Central Regional Conference of the American Catholic Philosophical Association at the St. Paul Seminary, St. Paul, Minnesota. His evaluation was later published in *The Thomist* (XVI (1953), 470-471). Dr. Oesterle presents to professor and student a good practical and well ordered text book for a course in General Ethics.

Dr. Oesterle's aim is "to recapture ethics as it was originally conceived to be—a practical science based on reasoning derived from common experience, though considering speculative truths as any science must necessarily do." (p. ix) This aim is definitely and successfully accomplished in this work.

The author accomplishes this aim in many ways. First, by clearly delineating the role of Moral Philosophy and Moral Theology, and keeping this distinction constantly before him as he discusses the question of human acts. There are a sizeable number of textbooks in the field of Ethics that make this distinction and then proceed to reject it by giving a theological explanation of moral philosophy, confusing theological and philosophical elements to a degree where the clarity of the thought is lost in the process.

Secondly, Professor Oesterle has followed closely the order of Aristotle in his *Nicomachean Ethics* and just as closely the order of St. Thomas' commentary on this work. At the end of each chapter are found suggested readings in Aristotle's *Ethics* and the commentary of St. Thomas Aquinas, as well as in other representative works. Too often the authors of many other Ethics books appeal to the theological reasoning of St. Thomas in the *Prima Secundae* and the *Secunda Secundae*. In this text book even though Dr. Oesterle does not quote from St. Thomas' commentary on Aristotle's *Nicomachean Ethics* he is definitely giving us the philosophical reasoning of St. Thomas and Aristotle. To anyone who has read the

Nicomachean Ethics and St. Thomas' commentary this fact will be immediately evident.

Thirdly, this text does not explicitly cover material contained in what is often called "Special Ethics." Professor Oesterle throughout the text remains faithful to his aim of giving a specific scientific consideration of General Ethics.

Fourth, the material treated, e.g. The Ultimate End, The Problem of Happiness, Virtue in General, The Voluntary, Freedom, etc., is not labored by long and involved syllogisms that make for confusion rather than demonstration. Dr. Oesterle presents the truth of Ethics in the same basic manner that Aristotle and St. Thomas did, appealing for the most part to the experience of mankind. He has placed after each chapter a section entitled "Review Questions." These questions when answered will give the student a very thorough knowledge of the moral philosophical truths treated in the chapter. This will be far more beneficial to the student than memorizing confused and perhaps illogical syllogisms that are soon forgotten.

Fifth, in discussing human acts, he is fully aware of the amount of matter that must be covered in a one semester course. A preliminary version of this book was used for several years at the University of Notre Dame. This valuable period of experimentation enabled Dr. Oesterle to see just how much matter could be covered in the time available. Planning his material accordingly, he divides his book into fourteen chapters. Eleven of these chapters are of fifteen pages or less. Each chapter contains a logical outline of the development of the matter and this enables the text to be workable for the professor in his lecture and the student in his study. One defect could be mentioned here. In the following pages, viii, 3, 40, 77, 95, 108, 133, 139, 148, and 163, where Dr. Oesterle considers various schools of thought pertinent to the matter under his discussion, it is the opinion of this reviewer that it would be more scholarly if he would give footnote reference to these schools.

Sixth, the author is well aware of the pedagogical fact that it is necessary to create interest in the minds of the student of any science. Conscious of this fact Dr. Oesterle terminates each chapter with his "Points for Discussion." These problems will be thought-provoking for most students and if they are discussed, whether in class or over cafeteria tables, will of necessity tend to intensify a student's interest in a science that is most practical for his individual as well as social life.

This is Dr. Oesterle's second text-book in Thomistic Philosophy. His text in Logic was well received both by professor and student. I am confident that this text in General Ethics will be even more acceptable.

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Introduction to the Philosophy of St. Thomas Aquinas. Vol. II. Cosmology.

By H. D. GARDEIL, O. P. Translated by JOHN A. OTTO. St. Louis: Herder, 1958. Pp. 218 with index. \$3.75.

For anyone attempting a general introduction to the philosophy of St. Thomas Aquinas, his philosophy of nature (popularly known as Cosmology) looms as a major problem. It is to Fr. Gardeil's credit that he has successfully faced so many of these difficulties and has produced a text which when supplemented by lectures will meet many of the requirements of the college professor.

The body of the book, beginning with chapter two, gives a lucid and brief summary of Aristotle's natural philosophy. Chapter two itself is devoted to the Hylomorphic Theory. The succeeding chapters in turn take up the problems of quantity and quality (chapter three), nature (chapter four), the causes (chapter five), motion (chapter six), the concomitants of motion (chapter seven), the existence of a Prime Mover (chapter eight) and Aristotelian astronomy (chapter nine). Finally there is a general summary followed by an appendix in which the author supplies the reader with key texts from the works of St. Thomas.

These sections of Fr. Gardeil's *Cosmology* are well presented. He adheres faithfully to the texts of St. Thomas except possibly for one instance: privation as a principle of mobile being even *in esse*. Benignly interpreted, Fr. Gardeil means that the particular privation *in fieri* is of course opposed to the substantial form *in esse*. Certainly these two cannot co-exist. But should he mean to exclude all privation as a principle *in esse*, then he is manifestly against the express doctrine of St. Thomas in his *Commentary on the Physics of Aristotle*: "One can object that there is no privation in a subject when it is under a form; and hence privation is not a *per accidens* principle *in esse*. And so it must be said that matter never is without privation; because when it has one form, it is with a privation of another form . . . when the form has already come, then there is found in it (matter) a privation of another form." (Book I, lesson 13, paragraph 4).

It is with the initial introductory chapter, however, that this reviewer expresses dissatisfaction. Here Fr. Gardeil investigates the problems of the nature of cosmology and the distinction between philosophy and modern science. It is obvious at once that everything hinges on these questions, for unless we can establish the relationship of modern science to Thomistic cosmology there is little profit to a study of that cosmology. If modern science has superseded philosophy, or at least the philosophy of nature, then it should be removed from the college curriculum and treated merely historically. On the other hand, if cosmology as St. Thomas understood it is the foundation of all modern science, then should it be mandatory. In

any case, one cannot intelligently treat of cosmology until some solution to these problems has been attained.

But Fr. Gardeil does not solve them. He cites the well-known position of M. J. Maritain: "The philosophy of nature, he observes, does not disregard the objects perceived by sense (objects corresponding to the first degree of abstraction), but it explains them by principles that are broadly speaking ontological or metaphysical; for it employs such notions as corporeal substance, quality, active and passive potency, material and formal cause, and others of similar 'ontological' content. The sciences of nature, on the other hand, generally stick to more concrete notions. Theirs are the concepts of what is physically measurable, of things that lend themselves to verification by experience. And when the sciences go a step further, they do not resort to ontological but to mathematical principles, which fall short of the ontological degree of abstraction." (page six of text). Then Fr. Gardeil offers some difficulties to this position, and fails to conclude definitively. How, one may ask, can a review of cosmology be made until this problem is solved, at least in the mind of the writer?

It is not to our purpose here to criticize M. Maritain's position. Yet it seems that Fr. Gardeil's entire book is weakened by his failure to give a clear and Thomistic answer to the relationship of science and philosophy. Interestingly, the author does give a brief comment on the makers of the modern scientific world at the end of his book. Why does he not compare Galileo's Dialogue, for example, with Aristotle's Physics? In both works we observe a blending of observed data and conclusions drawn from that data. The accuracy of the data varies, but the method is the same. Can we not say that Aristotle is a scientist as well as a philosopher; that Galileo is both scientist and philosopher, too? Mere collection of data is not science; it is rather the interpretation of that data by inductive and deductive processes that is both science and philosophy. Whatever their distinction be (perhaps there is none), it must be clarified before one can undertake any intelligent summary of cosmology for modern man.

A word of commendation to Fr. John Otto for his fine translation and informative foot-notes which clarify several points in the text.

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Social and Cultural Dynamics. By PITIRIM SOROKIN. Boston: Extending Horizons Books—Porter Sargent Publishers. 1957. Pp. 727 with indexes. \$7.50.

When Sorokin's *Social and Cultural Dynamics* first appeared it was, with reason, hailed as a major work in the philosophy of history. In the four volumes now presented in abridged form, and from which we quote in the current review, Sorokin took as his hypothesis that the integrating factor of human culture is its "logico-meaningful" content and this, he thought, forms the core common denominator of a culture: "it is the identity (or dissimilarity) of central meaning, idea, or mental bias that permeates all the logically related fragments" (p. 11). "Meaningful and logical integration," he continued, "by definition can only exist where there is mind and meaning" (p. 13). It was with the idea of discovering the mind and meaning evident in man's way of life from Greek times to the present that Sorokin in the 1930s set himself the task of analysing forms of art, music, literature, ethics, philosophy, religion, general social relations and many other cultural phenomena [his definition of human cultures: "In its broadest sense it may mean the sum total of everything which is created or modified by the conscious or unconscious activity of two or more individuals interacting with one another or conditioning one another's behavior." (p. 2)] He set himself a series of questions about human culture which are to be found on p. 65.

The result of Sorokin's impressively lengthy researches showed three major conceptions of reality and truth: ideational culture whose needs and ends are mainly spiritual, non-sensate and non-material (p. 27); sensate culture which is materialistic but efficient and leads to great external changes (p. 28); and idealistic culture, a mixed type which contains both material and spiritual elements (pp. 28-29).

By profession, sociologists are scientists and not philosophers. Their aim is to be specialists concerned only with the observation, description, and classification of *facts* concerning the structure and function of social relations and the culture established through these relations. Sociologists seek to understand social and cultural phenomena for the establishment of statistical laws, and for the formulation of theories which will account for these laws and which will aid in predicting future social change within the limitations of all the social sciences which deal with human beings whose actions are not always predictable. Although some philosophers and theologians deplore this narrow specialization for one reason or another, arguing with sociologists that they do not know their own business and its limitations, the fact is that some sociologists are sometimes influenced by a philosophy which they hold, and although this may be by design it is usually *unintentional*. Christians are often influenced by their other-worldly ap-

proach to life on earth; positivists think that the whole of truth may be known by observable facts of social relationships; Freudians consider that much of social behavior is conditioned in early childhood; followers of Hegel give inner mystic meanings to a synthesis and antithesis of ideas in a constant condition of flux until truth is eventually attained.

In considering that the measurable manifestations of social relations and culture are determined by fluctuation according to the core content, now ideational, now sensate, and again idealistic, Sorokin was undoubtedly influenced by Hegel, and essentially idealistic in the Hegelian sense of the term (which obviously differs from his own). Sociologists in general have been concerned to ascertain if Sorokin's theories were indeed supported by the wealth of facts he provided—the thousands of erudite allusions to the meanings which he adduced to the history of art, music, literature, philosophy and the rest from early Graeco-Roman times down to the present sensate trough to which he thinks we in America have descended. They usually consider that his work, while interesting as a philosophy of history, impressive in its erudition, and undoubtedly helping to forward what is known as the sociology of knowledge, is philosophical rather than sociological. As a philosophy of history, Sorokin's work may be compared with Toynbee's ten volumes, and their theory that social change develops by means of challenge, response, withdrawal, and return. Sorokin, of course, has a true sociological conception of the interaction of culture and its integration (and disintegration, at times) and, too, of the cultural aspects of human thought and philosophy. He considered his own work especially valuable because he aimed precisely at a unified cultural system (*Fads and Foibles in Modern Sociology and Related Sciences*, 1956, p. 164; cf. reviews in *The Critic (Books on Trial)* Vol. IV, No. 8, June-July 1956; *The American Catholic Sociological Review*, Vol. XVIII, No. 2, June 1957, pp. 148-149). All Sorokin's works are original and the volume herewith reviewed most certainly provides many insights for those concerned with the sociology of knowledge, yet the net evaluation of the sociologists, perhaps unwisely, seems to give more sociological importance to other works of his.

This new 1957 edition omits most of the numerous footnotes in the earlier volumes, all the paragraphs and pages of secondary importance, and all the appendixes showing source material. Although mention is made of bringing the material up to date, this reviewer can only find five lines added on page 547, and mention of seven or eight new books. Those who have access to the original four volumes will not need to purchase the abridgment; new readers may well find this edition valuable, to discover for themselves what Sorokin has to say and something of his method.

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EVA J. ROSS

Towards A Critical Naturalism. By PATRICK ROMANELL. New York: The Macmillan Company, 1958. Pp. 103. \$3.25.

The first four essays of the six which comprise this small volume were originally delivered by the author when he was a Fulbright Visiting Professor of Philosophy at the University of Turin in 1952-53. The same lectures were given later at the *Casa de la Cultura Ecuatoriana* in Quito, when, under a Smith-Mundt grant from the State Department, the author served as Visiting Professor at the Central University of Ecuador.

Italian and Spanish versions have already been published under the titles, *Verso un naturalismo critico* (1953), and *El neo-naturalismo norteamericano* (1956). The supplementary two essays reflect the author's interest in defending an ethical theory founded on the "new" naturalism. The earlier essays consider the general tenets of contemporary American naturalism, a naturalistic defense of metaphysics, an examination of the logic, a critical naturalism, and a critique of Dewey's ethical theory.

Professor Romanell's work is interesting in that it repudiates the dogmatic materialism of his predecessors, while conceding contemporary naturalism to be a derivative of that materialism.

He calls his method "critical," not in contradistinction to a naive or uncritical acceptance of unsubstantiated theory, but because of what he calls a "continuity of analysis" foreign both to the thought of older materialism and the anti-metaphysical bias of the logical positivist. It is critical too in that it is a "crisis" naturalism invested with a "tragic sense of life" and an acute awareness of man's contemporary dilemma.

The author sees naturalism, realism and pragmatism as three currents of American thought which have arisen as a protest against both the truculence of nineteenth-century materialism, and the Roycean idealism which was so influential on the American scene at the end of the last century.

The new naturalism as described by Professor Romanell is not only much more reserved in its espousal of the cause of empiriological science (physics he holds to be the stronghold of the old naturalism), but considers spiritual experience a legitimate way of organizing the facts of natural experience. Spiritual experience, which is not described, is held to be an experience of nature which alone "quickens and inspires living."

Science is not repudiated in the new naturalism, but like art and religion, it reveals to man but a facet of nature's possibilities. Thus the basic and indemonstrable assumption of naturalism, "Nature is all there is," despite its apparent crudity, includes a reverence for beauty, sanctity, justice and wisdom. The author believes that naturalism alone avoids the fallacy of exclusivism to which dualism and phenomenism, as well as materialism and idealism, are inclined.

Although the author says that Bradley may be right when he identifies metaphysics as "the finding of bad reasons for what we believe upon instinct," he agrees that the finding of those reasons is itself instinctual.

There follows an unconvincing attempt to reconcile the "dogmatic stand of traditional metaphysics and the equally dogmatic stand of agnostic positivism." Professor Romanell makes a spirited defense, but, as he seems to consider metaphysics merely a methodology that sees in its entirety what science sees partially, it is highly questionable that it is really metaphysics that he is defending.

In his interesting comments on a naturalistic ethic, the author acknowledges a debt both to British utilitarianism and American pragmatism, but feels that a science of ethics cannot be constructed on Dewey's suppositions. Man, to him, is more than a seeker of happiness; "he is also a maker and keeper of obligations." Thus man's moral life must consider both the eudaemonistic, which concerns the pursuit of happiness, and the juristic, which concerns man's obligations and duties.

It is unfortunate that Professor Romanell does not consider the claims of traditional metaphysics, the natural law, nor *the object* of religious experience, all of which would be relevant to his subject matter. The new naturalism in its preoccupation with new answers, has forgotten to ask some old questions.

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Mariology II. Edited by JUNIPER B. CAROL, O. F. M. Milwaukee: Bruce, 1957. Pp. 618. \$9.50.

This is the second volume of a projected trilogy. The announced purpose of the series is to present "a comprehensive symposium, in the vernacular, covering the entire theological tract relative to Our Blessed Lady." In pursuit of this purpose, the first volume dealt largely with the sources of Mariology; the second is concerned, for the most part, with the individual doctrines within Mariology; the third, now in the writing, will treat of Marian devotion. One deviation from this plan should be noted: the discussion of Mary in the writings of the Eastern Fathers is included in the second volume; while the doctrines of the Immaculate Conception and Mary's immunity from actual sin are included in the first. The effort to achieve the purpose of the symposium has succeeded admirably. Under the inspiration and editorship of Father Juniper B. Carol, O. F. M., the first two volumes represent a solid achievement in the presentation of a

major work in English. The present volume, with fourteen articles by twelve authors, is a smooth, readable and soberly scientific work.

Father Cyril Vollert, S. J., contributes two introductory chapters. The first, dealing with the scientific structure of Mariology, sets the careful, scientific tone of the volume and effectively vindicates the position of Mariology as a distinct, but not isolated, part of the science of theology; it is suggested that Mariology be located between the tract on the Redemption and the theological tract on the Church. In the second article, the much debated question of the fundamental principle of Mariology is discussed at length. Father Vollert sets out eight of the more prominent and more promising of the tentatives, and then comes out firmly for the Divine Maternity as the fundamental principle. The pivot of his very convincing argument is that the connection among the prerogatives of Mary is not derived from the nature of things, but from divine decree; we are to look for a theological and not a metaphysical unity in a theological discipline.

Father Walter J. Burghardt, S. J., provides a concise, stimulating and rewarding study of the Eastern Fathers. He regards the Fathers' vision of Mary as the New Eve as their original insight into her role in the Redemption. This role, as they saw it, was cooperation in the objective Redemption; and although this role was regularly reduced by them to Mary's mothering of the Redeemer, there are some significant indications of a more proximate cooperation being attributed. His discussion of the virginity of Mary is noteworthy for his description of the development of the doctrine of *virginitas in partu*, and his discussion of the divine maternity for the history of *Theotokos* before Ephesus. He carefully considers the problem of the contrast between the Fathers' teaching of Mary's holiness and their apparent conviction that she had sinned. With regard to the Immaculate Conception, he points out that the Fathers formulated the major premises of this privilege, "but it is only incidentally, almost accidentally, that a few . . . formulate the prerogative in explicit or equivalent terms." He emphasizes the role of Epiphanius in the development of the doctrine of the Assumption, showing that Epiphanius, despite some hesitations, had an intuition of the doctrine.

The predestination of Mary is discussed by Father John Bonnefoy, O. F. M. He makes a vigorous presentation of his own theory, differing from both the Thomistic and Scotistic systems, but leaning rather heavily on the latter. Father Gerald Van Ackeren, S. J., provides a complete and searching treatment of the divine maternity. In addition to a full presentation of the positive data, he considers at some length the question of the essence of this maternity. He makes a strong defense of the view that this maternity is a formal participation in the fecundity of the Father,

and tentatively solves the difficulties of this view by placing it in the framework of De la Taille's theory.

Father Philip J. Donnelly, S.J., offers a complete discussion of the virginity of Mary, particularly worthwhile for the detailed description of the historical development of the doctrine of *virginitas in partu* and *post partum*. Fathers Frank P. Calkins, O.S.M., and Francis J. Connell, C.S.S.R., present shorter (by reason of the subject matter) treatments of Mary's fullness of grace and her knowledge; both chapters provide thorough discussions of the topics. Father Wenceslaus Sebastian, O.F.M., gives a complete and sound treatment of the spiritual maternity.

The discussion of the coredeemption is handled by Father Carol, editor of the series and recognized authority on this aspect of Mariology. This chapter is particularly rich in information regarding the historical development of the doctrine and the contemporary discussion of it; the explanations of concepts and the solutions of difficulties are painstakingly clear. Father Armand J. Robichaud, S.M., offers a full picture of Mary as dispensatrix of all graces; he maintains that this thesis is now *de fide divina et catholica* from the ordinary magisterium.

The discussion of the death and assumption of Mary is very soundly presented by Father Lawrence P. Everett, C.S.S.R. The consideration of her death is comparatively brief and the discussion of the assumption is organized as an extended commentary on *Munificentissimus Deus*. Father Firmin Schmidt, O.F.M. Cap., gives a complete presentation of the evidence for and a solid analysis of the fact of Mary's queenship. Since *Ad Coeli Reginam* had not appeared at the time of the writing of the chapter, it is briefly discussed in an appendix. The final chapter, by Father Vollert, deals with the pressing and complicated problem of the analogy of Mary to the Church. He presents an outline of the elements of the problem and a very perceptive examination of perspectives of development. Rejecting the tentatives of Köster, Semmelroth and Müller, he argues that the analogy is to be explained within the framework of Mary's "productive coredeemption."

This volume can be judged to have met the standard set by its predecessor and to be, therefore, a definite success. It will be significant reading for any serious student of Mariology and a distinct boon for those interested in theology but limited in their range of reading to works in English. Projects such as this are long overdue.

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The Scholastic Analysis of Usury. By JOHN T. NOONAN, JR. Cambridge, Mass.: Harvard University Press, 1957. Pp. 432. \$9.00.

At the outset, a reader is inclined to be struck by the style of the author. It is an extraordinary feat to discuss usury doctrine over seven centuries and come up with a book so fascinating that it is difficult to lay it down until it is finished. The author achieved this facility of style almost exclusively by the lucidity of his presentation and the forcefulness of his views. This is not a popularization. Latin terms are used freely, as are philosophical and economic concepts. Yet the overall impact is remarkable.

Content keeps pace with style. The main purpose of the book is a clear presentation of the development of scholastic doctrine in regard to usury. Primarily this is done by quotations and succinct summaries from the works of the major theologians and canonists. There is, however, an abundance of references to economic conditions underlying these analyses, and also to papal and other decrees affecting Catholic practice in regard to usury.

An incidental, but important, aim of the book is the correction of erroneous yet common misconceptions regarding scholastic usury doctrine. The author is not reluctant to take on big names. James Westfall Thompson, Max Weber, R. H. Tawney, and Rev. Bernard Dempsey, S. J., are among the respected writers taken to task for inadequate insight into traditional doctrine and its development.

The documentation offered is formidable. Over a hundred theologians are cited, and nearly all their major works noted. St. Thomas, for example, is presented in terms of four of his works, with the main quotation taken from his *De Malo* rather than the *Summa Theologica*.

According to the author, the overriding objection to usury was that, in the lending of money, one is "selling" an object whose only purpose is consumption. Hence to charge for the use of money is, in effect, to sell the same object twice. It was this concept only, not the idea that money was barren, that dominated the thinking of the philosophers and theologians.

The early writers did permit, to a limited degree, a return based on such extrinsic titles as loss incurred or gain foregone. But these titles were highly restricted, and would be most inadequate to support a modern banking system. Medieval writers did permit profit upon investment, the partnership contract, and rent of real property.

As the commercial revolution expanded the need for credit, scholastic writers began a searching re-examination of the usury doctrine. The *montes pietatis*, the *trinus contractus*, and finally the legal interest rate were accepted as means for providing funds, yet assuring a return to the lender. The author concludes by citing a 1950 discourse of Pope Pius XII, to

employees and directors of the Bank of Rome, as indicating present views that the banking system performs a useful social function.

Such a succinct summary hardly does justice to the admirable way in which the author handles his complex subject. We can see, in page after page, the soul-searching efforts of the scholastics to meet the needs of economic life in a way compatible with justice and other tenets of the moral law. While the book makes no plea for the theologians and philosophers, yet their efforts come through admirably as realistic and sincere attempts to apply social ethics to the complex world of commerce and business.

This work should prove a definitive treatment of the scholastic analysis of usury. Its author is a lawyer who holds a doctorate in scholastic philosophy, has edited the *Harvard Law Review*, and has worked in policy planning for the National Security Council. It is almost unbelievable that a man with so many other preoccupations upon his mind could have found the time to write this book. Its obvious excellence must give him great satisfaction. He has contributed notably to America's reputation in the field of scholastic philosophy.

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Eleven Years of Bible Bibliography. The Book Lists of the Society for Old Testament Study 1946-1956. Edited by H. H. ROWLEY. Indian Hills, Colorado: Falcon's Wing Press, 1957. Pp. 804. \$7.50.

These lists actually include most of the books published on the Old Testament since 1940. Although the Society did not publish any lists during the war years, the 1946, 1947 lists have been brought up to date. The volume is an invaluable aid for all students of the Old Testament. Beginners, facing the task of acquainting themselves with the vast amount of literature in this field—and in all languages—will find it indispensable. The lists not only classify the books according to subject-matter, but, more importantly, contain short notes on each book giving the general contents, original contribution of the various authors, new theories about old problems and judgments as to quality which are very helpful in emphasizing the more important works. The classification suffers from being a bit too general in character, and, understandably, the lists do not include any reference to the vast amount of important periodical material that has appeared since 1940. The volume is provided with a complete author index, a subject index, and a key to the initials of the reviewers among whom are such experts as G. W. Anderson, W. F. Albright, G. R. Driver, O. Eissfeldt, etc. Of course, the work is essential for any general theological library.

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